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ENVIRONMENTAL PROTECTION AGENCY

■

LIGHT-DUTY DIESEL POWERED TRUCKS

Air Pollution Control

Title 40—Protection of Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

[FRL 2621]

PART 85—CONTROL OF AIR POLLUTION FROM NEW MOTOR VEHICLES AND NEW MOTOR VEHICLE ENGINES

Regulations for Control of Light Duty Diesel-Powered Trucks

Light duty gasoline-fueled and diesel-powered passenger vehicles and light duty gasoline-fueled trucks are currently controlled for emissions by regulation. On January 25, 1974, regulations for control of emissions from the remaining light duty category, light duty diesel-powered trucks, were proposed (39 FR 3276). Regulations for this light duty category were not proposed previously since no light duty diesel-powered trucks were being marketed in the United States. The proposal was in response to notification by one manufacturer of plans to market a light duty diesel truck for the 1976 model year. Since that time, two other manufacturers have indicated that they may market a light duty diesel truck as early as the 1976 model year.

Except for the levels of the standards, the regulations contain essentially identical provisions to those already promulgated for light duty diesel-powered passenger vehicles. The levels of the emission standards are the same as for light duty gasoline-fueled trucks, which are slightly higher than the "interim 1975" standards for light duty passenger vehicles. These standards are expected to be met through the application of existing technology.

The proposed regulations incorporated the amendments proposed on October 12, 1973, which would require that new vehicles to be sold at high altitudes (above 4,000 feet), be certified for compliance with Federal emission standards at these altitudes. Those amendments are not incorporated in this final rulemaking since this rulemaking is to be effective beginning with the 1976 model year while the high altitude amendments, although originally intended to be effective for the 1976 model year, are now planned to be effective with the 1977 model year. The high altitude amendments are expected to be promulgated shortly and will be applicable to light duty diesel trucks in addition to light duty gasoline and diesel-powered passenger vehicles and light duty gasoline-fueled trucks.

Other changes to the regulations reflect the adoption of comments received on the proposed regulations. These changes included correcting errors in the proposal, and increasing the allowable temperature range of the heated hydrocarbon analytical system.

Concern was expressed in the comments about the requirement for air posting data from emission tests within 24 hours. Such a requirement presently exists for foreign manufacturers of gasoline-powered light duty passenger cars and trucks as well as diesel-powered passenger car manufacturers (Mercedes-Benz and Peugeot). Few problems have been encountered in the timely and successful transmittal of data by these manufacturers. Some concern may exist due to the necessity of hand-reading and integrating the heated FID traces after a diesel vehicle has completed the driving schedule. It has been the Agency's policy to not consider a test completed until final emission data, i.e., grams/mile, exist. Thus, the time required for hand-reading emission traces is not a factor in successfully following the regulations for data transmittal as the time requirements do not apply until after the data is reduced.

Question was raised in the comments regarding the flexibility allowed to the manufacturers on the durability driving schedule in Appendix IV. As a matter of practicability, the Agency is only concerned with the driving schedule parameters of speeds, times, and rates of acceleration and deceleration. The 3.7 miles per lap, 11-lap durability driving course is not strictly required. Proposed durability schedules are routinely submitted to the Agency by manufacturers of light duty passenger vehicles and gasoline-fueled trucks and are approved if they meet sequential parameters. The same policy will hold for light duty diesel-powered trucks.

Comments also suggested substantial changes to the diesel fuel specifications in order to lessen the difficulty of obtaining such fuels and to make them more representative of fuels available in the field. Similar comments have also been submitted by heavy duty diesel engine manufacturers. A study is underway to determine what changes should be made to diesel fuel specifications. When this study is complete, changes will be made simultaneously to the diesel fuel specifications for light duty diesel-powered passenger vehicles and trucks and heavy duty diesel engines.

The proposed regulations permitted cetane improver additives in the fuels. Comments received pointed out that most cetane improver additives are nitrogen containing and that their use can result in NO2 emissions over and above those normally produced by the engine. EPA views this as a valid concern and intends to evaluate the use of cetane improvers during the review of diesel fuel specifications which is in process. For the present, however, it is felt that the cetane requirements stated in the proposal are low enough that cetane improvers are not normally required.

Concern was also expressed in the comments over whether paragraph 376-10(d) is restrictive of paragraphs 10(b) and 10(c) which allow the use of substantially equivalent fuels. EPA added the provisions of paragraph (d) in order to allow the use of fuels other than traditional diesel fuels if engines are designed for such fuels and if such fuels are indeed commercially available. The intent of this paragraph is not to prevent the vehicle manufacturer and the Administrator from reaching agreement on use of equivalent diesel fuels as allowed in 10(b) and 10(c) but is to allow additional flexibility in the design of engines which use non-traditional petroleum distillate fuels.

One commenter objected to testing light duty diesel trucks for emissions over the same driving cycle that is used for testing passenger cars because of differences in the application and performance of these vehicles. EPA does not accept this argument due to the following considerations:

(1) The application of light duty diesel truck is the same as that of light duty gasoline trucks which are tested for compliance with the standards over this same driving cycle. EPA chose to use this same driving cycle when promulgating regulations for light duty gasoline trucks last year because it is precisely the operation of cars and trucks in the city driving situation represented by this cycle with which EPA is concerned.

(2) As regards the typically lower performance of light duty diesel trucks compared to light duty passenger vehicles, exactly the same relationship also exists between diesel and gasoline light duty passenger vehicles. The light duty diesel-powered passenger vehicle is marketed as a direct replacement for gasoline-fueled light duty passenger vehicles, also has substantially lower performance than its gasoline-fueled counterpart, and is tested over this same driving cycle. The urban driving cycle represents an average city trip and it has been recognized that among the broad spectrum of light duty vehicles would exist some of which would be incapable of exactly following the driving cycle. Such a situation is allowed for in that those vehicles are required to do the best that they can, as would be the case of their operation in actual traffic.

Several commenters argued that the regulations are not desirable at this time since (1) the added cost of regulations may discourage further efforts to utilize diesel engines in light duty trucks at a time when there is a need to conserve petroleum, and introduce alternative engines which may be able to comply with future emission requirements, and (2) EPA has not shown that the numbers of diesel-powered light duty trucks likely to be sold will cause any significant detrimental effect upon air quality.

EPA recognizes the favorable fuel economy and emissions characteristics of diesel engines. However, the difference that regulations will make in the small quantity of light duty diesel trucks likely to be sold in replacement of light duty gasoline trucks in the near future is wholly unlikely to have any significant impact on national petroleum consumption. In addition, the difference that regulations will make in the amount of capital made available by the sale of light duty diesel trucks for research and development of an advanced light duty diesel engine is not likely to be significant especially when compared to the amount of capital that will be made available for research and development by the more voluminous sale of presently regulated light duty diesel passenger vehicles.

To the second part of the comment, the following consideration is relevant. Any vehicle or small group of vehicles,

viewed exclusive of all other vehicles or groups of vehicles, can be said to contribute insignificantly to air pollution. In recognition of that viewpoint, the Clean Air Act provides for the control of any class of vehicles which "causes or *contributes* to * * * air pollution." In the absence of a sufficient basis for excluding light duty diesel trucks from regulations, EPA chooses to require control of their emissions. To do otherwise would allow one category of vehicles (light duty diesel trucks) to go unregulated which is a direct replacement for another category of vehicles (light duty gasoline trucks) which EPA requires to meet emission standards.

Subpart D of Part 85 of Chapter 1, Title 40 of the Code of Federal Regulations, as applicable to 1976 and later model year light duty diesel-powered trucks is added below and is effective on November 21, 1974.

Dated: October 2, 1974.

RUSSELL E. TRAIN,
Administrator.

Part 85 of Chapter I, Title 40 of the Code of Federal Regulations is amended to add Subpart D, applicable to light duty diesel truck beginning with the 1976 model year, as follows:

Subpart D—Emission Regulations for New Diesel Light Duty Trucks

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85.376–39 Submission of maintenance instructions.
85.377–1 Emission standards for 1977 model year vehicles.

AUTHORITY: Sec. 202, 206, and 301(a) of the Clean Air Act, as amended (42 U.S.C. 1857f–1, 1857f–5, 1857g(a)).

Subpart D—Emission Regulations for New Diesel Light Duty Trucks

§ 35.301 General applicability.

The provisions of this subpart are applicable to new diesel light duty trucks.

§ 85.302 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act:

"Act" means Part A of title II of the Clean Air Act, 42 U.S.C. 1857 f–1 through f–7, as amended by Public Law 91–604.

"Administrator" means the Administrator of the Environmental Protection Agency or his authorized representative.

"Model year" means the manufacturer's annual production period (as determined by the Administrator) which includes January 1 of such calendar year: *Provided,* That if the manufacturer has no annual production period, the term "model year" shall mean the calendar year.

"Gross vehicle weight" means the manufacturer's gross weight rating for the individual vehicle.

"Light duty truck" means any motor vehicle rated at 6,000 pounds GVW or less, which is designed primarily for purposes of tarnsportation of property or is a derivative of such a vehicle, or is available with special features enabling off-street or off-highway operation and use.

"Vehicle curb weight" means the actual or the manufacturer's estimated weight of the vehicle in operational status with all standard equipment, and weight of fuel at nominal tank capacity, and the weight of optional equipment computed in accordance with § 85.376–5(g).

"Loaded vehicle weight" means the vehicle curb weight of a light duty vehicle plus 300 pounds.

"System" includes any motor vehicle engine modification which controls or causes the reduction of substances emitted from motor vehilces.

"Engine family" means the basic classification unit of a manufacturer's product line used for the purpose of test fleet selection and determined in ac-

"Engine-system combination" means an engine family-exhaust emission control system-fuel evaporative emission control system (where applicable) combination.

"Fuel system" means the combination of fuel tank, fuel pump, fuel lines, and carburetor, or fuel injection components, and includes all fuel system vents and fuel evaporative emission control systems.

"Exhaust emissions" means substances emitted to the atmosphere from any opening downstream from the exhaust port of a motor vehicle engine.

"Tank fuel volume" means the volume of fuel in the fuel tank, prescribed to be 40 percent of nominal tank capacity rounded to the nearest whole U.S. gallon.

Zero (0) miles means that point after initial engine starting (not to exceed 10 miles of vehicle operation or 1 hour of engine operation) at which normal assembly line operations and adjustments are completed.

"Calibrating gas" means a gas of known concentration which is used to establish the response curve of an analyzer.

"Span gas" means a gas of known concentration which is used routinely to set the output level of an analyzer.

"Oxides of nitrogen" means the sum of the nitric oxide and nitrogen dioxide contained in a gas sample as if the nitric oxide were in the form of nitrogen dioxide.

"Useful life" means a period of use of 5 years or 50,000 miles, whichever first occurs.

"Scheduled maintenance" means any adjustment, repair, removal, disassembly, cleaning, or replacement of vehicle components or systems which is performed on a periodic basis to prevent part failure or vehicle malfunction.

"Unscheduled maintenance" means any adjustment, repair, removal, disassembly, cleaning, or replacement of vehicle components or systems which is performed to correct a part failure or vehicle malfunction.

"EPA Enforcement Officer" means any officer or employee of the Environmental Protection Agency so designated in writing by the Administrator (or by his designee).

"Auxiliary Emission Control Device (AECD)" means any element of design which senses temperature vehicle speed, engine RPM, transmission gear, manifold vacuum, or any other parameter for the purpose of activating, modulating, delaying, or deactivating the operation of any part of the emission control system.

"Defeat Devise" means an AECD that reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal urban vehicle operation and use, unless (1) such conditions are substantially included in the Federal emission test procedures, or (2) the need for the AECD is justified in terms of protecting the vehicle against damage or accident, or (3) the AECD does not go beyond the requirements of engine starting.

§ 85.303 Abbreviations.

The abbreviations used in this subpart have the following meanings in both capital and lowercase:

Accel.—Acceleration.
ASTM—American Society for Testing and Materials.
C.—Centigrade.

C.f.h.—Cubic feet per hour.
CO_2—Carbon dioxide.
CO—Carbon monoxide.
Conc.—Concentration.
C.f.m.—Cubic feet per minute.
Cu. in.—Cubic inch(es).
Decel.—Deceleration.
F.—Fahrenheit.
Gal.—U.S. gallon(s).
Gm.—Gram(s).
GVW—Gross Vehicle Weight.
HC—Hydrocarbon(s).
Hg—Mercury.
Hi.—High.
HP.—Horsepower.
ID—Internal diameter.
Lb.—Pound(s).
Lb.-ft.—Pound-feet.
Min.—Minute(s).
Ml.—Milliliter(s).
M.p.h.—Miles per hour.
Mm.—Millimeter(s).
Mv.—Millivolt(s).
N_2—Nitrogen.
NO—Nitric oxide.
NO_2—Nitrogen dioxide.
NO_x—Oxides of nitrogen.
No.—Number.
P.p.m.—Parts per million by volume.
P.s.i.—Pounds per square inch.
P.s.i.g.—Pounds per square inch gauge.
R—Rankine.
R.p.m.—Revolutions per minute.
S.A.E.—Society of Automotive Engineers.
Sec.—Second(s).
Sp.—Speed.
SS—Stainless steel.
V.—Volts.
Vs.—Versus.
WOT.—Wide open throttle.
Wt.—Weight.
'—Feet.
"—Inches.
°—Degrees.
%—Percent.

§ 85.304 General standards: increase in emissions; unsafe conditions.

(a) (1) Every new motor vehicle manufactured for sale, sold, offered for sale, introduced or delivered for introduction into commerce, or imported into the United States for sale or resale which is subject to any of the standards prescribed in this subpart shall be covered by a certificate of conformity issued pursuant to §§ 85.376–2 through 85.376–4 and 85.376.29 through 85.376–34 of this subpart.

(b) (1) Any system installed on or incorporated in a new motor vehicle to enable such vehicle to conform to standards imposed by this subpart:

(i) Shall not in its operation or function cause the emission into the ambient air of any noxious or toxic substance that would not be emitted in the operation of such vehicle without such system, except as specifically permitted by regulation; and

(ii) Shall not in its operation, function, or malfunction result in any unsafe condition endangering the motor vehicle, its occupants, or persons or property in close proximity to the vehicle.

(2) Every manufacturer of new motor vehicles subject to any of the standards imposed by this subpart shall, prior to taking any of the actions specified in section 203(a) (1) of the Act, test or cause to be tested motor vehicles in accordance with good engineering practice to ascertain that such test vehicles will meet the requirements of this section for the useful life of the vehicle.

§ 85.305 Hearings on certification.

(a) (1) After granting a request for a hearing under § 85.375–3 or § 85.376–30, the Administrator will designate a Presiding Officer for the hearing.

(2) The General Counsel will represent the Environmental Protection Agency in any hearing under this section.

(3) If a time and place for the hearing have not been fixed by the Administrator under § 85.376–3 or § 85.376–30, the hearing shall be held as soon as practicable at a time and place fixed by the Administrator or by the Presiding Officer.

(4) In the case of any hearing requested pursuant to § 85.376–30(b) (4) (i), the Administrator may in his discretion direct that all argument and presentation of evidence be concluded within such fixed period not less than 30 days as he may establish from the date that the first written offer of a hearing is made to the manufacturer. To expedite proceedings, the Administrator may direct that the decision of the Presiding Officer (who may, but need not be the Administrator himself) shall be the final EPA decision.

(b) (1) Upon his appointment pursuant to paragraph (a) of this section, the Presiding Officer will establish a hearing file. The file shall consist of a notice issued by the Administrator under § 85.376–3 or § 85.376–30, together with any accompanying material, the request for a hearing and the supporting data submitted therewith and all documents relating to the request for certification and all documents submitted therewith, and correspondence and other data material to the hearing.

(2) The appeal file will be available for inspection by the applicant at the office of the Presiding Officer.

(c) An applicant may appear in person, or may be represented by counsel or by any other duly authorized representative.

(d) (1) The Presiding Officer upon the request of any party, or in his discretion, may arrange for a prehearing conference at a time and place specified by him to consider the following:

(i) Simplification of the issues;

(ii) Stipulations, admissions of fact, and the introduction of documents;

(iii) Limitation of the number of expert witnesses;

(iv) Possibility of agreement disposing of all or any of the issues in dispute;

(v) Such other matters as may aid in the disposition of the hearing, including such additional tests as may be agreed upon by the parties.

(2) The results of the conference shall be reduced to writing by the Presiding Officer and made part of the record.

(e) (1) Hearings shall be conducted by the Presiding Officer in an informal but orderly and expeditious manner. The parties may offer oral or written evidence, subject to the exclusion by the Presiding Officer of irrelevant, immaterial, and repetitious evidence.

(2) Witnesses will not be required to testify under oath. However, the Presiding Officer shall call to the attention of witnesses that their statements may be subject to the provisions of title 18 U.S.C. 1001 which imposes penalties for knowingly making false statements or representations, or using false documents in any matter within the jurisdiction of any department or agency of the United States.

(3) Any witness may be examined or cross-examined by the Presiding Officer, the parties, or their representatives.

(4) Hearings shall be reported verbatim. Copies of transcripts of proceedings may be purchased by the applicant from the reporter.

(5) All written statements, charts, tabulations, and similar data offered in evidence at the hearing shall, upon a showing satisfactory to the Presiding Officer of their authenticity, relevancy, and materiality, be received in evidence and shall constitute a part of the record.

(6) Oral argument may be permitted in the discretion of the Presiding Officer and shall be reported as part of the record unless otherwise ordered by him.

(f) (1) The Presiding Officer shall make an initial decision which shall include written findings and conclusions and the reasons or basis therefor on all the material issues of fact, law, or discretion presented on the record. The findings, conclusions, and written decision shall be provided to the parties and made a part of the record. The initial decision shall become the decision of the Administrator without further proceedings unless there is an appeal to the Administrator or motion for review by the Administrator within 20 days of the date the initial decision was filed.

(2) On appeal from or review of the initial decision the Administrator shall have all the powers which he would have in making the initial decision including the discretion to require or allow briefs, oral argument, the taking of additional evidence or the remanding to the Presiding Officer for additional proceedings. The decision by the Administrator shall include written findings and conclusions and the reasons or basis therefor on all the material issues of fact, law, or discretion presented on the appeal or considered in the review.

§ 85.306 Maintenance of records; submittal of information; right of entry.

(a) The manufacturer of any new motor vehicle subject to any of the standards or procedures prescribed in this subpart shall establish ,maintain and retain the following adequately organized and indexed records:

(1) *General records.* (i) (A) Identification and description of all certification vehicles for which testing is required under this subpart. (B) A description of all emission control systems which are installed on or incorporated in each certification vehicle. (C) A description of all procedures used to test each such certification vehicle. (ii) A properly filed application for certification, following the format prescribed by the US EPA for

the appropriate model year, fulfills each of the requirements of paragraph (a)(1) of this section.

(2) *Individual records.* (i) A brief history of each motor vehicle used for certification under this subpart in the form of a separate booklet or other document for each separate vehicle in which shall be recorded:

(A) In the case where a current production engine is modified for use in a certification vehicle, a description of the process by which the engine was selected, and of the modifications made, giving specifically the place of modification and installation of the engine into the certification vehicle and the person(s) in charge of modification and installation. In the case where the engine for a certification vehicle is not derived from a current production engine, a general description of the build up of the engine (e.g., experimental heads were cast and machined according to supplied drawings, etc.) giving specifically the place of engine assembly and installation into a certification vehicle and the person(s) in charge of engine assembly and installation. In both cases above, a description of the origin and selection process for the fuel injection components, fuel system, emission control system components, and exhaust aftertreatment device shall be included. The required descriptions shall specify the steps taken to assure that the certification vehicle with respect to its engine, drive train, fuel system, emission control system components, exhaust aftertreatment device, weight or any other device or component that can reasonably be expected to influence exhaust emissions will be representative of production vehicles and that either all components and/or vehicle construction processes, component inspection and selection techniques, and assembly techniques employed in constructing such vehicles are reasonably likely to be implemented for production vehicles or that they are as closely analogous as practicable to planned construction and assembly processes.

(B) A complete record of all emission tests performed under §§ 85.375–9 through 85.376–23 (except tests performed by EPA directly), including all individual worksheets and/or other documentataion relating to each such test, or exact copies thereof; the date, time, purpose, and location of each test; the number of miles accumulated on the vehicle when the test began and ended; and the names of supervisory personnel responsible for the conduct of the test.

(C) The date and times of each mileage accumulation run, listing both the milage accumulated and the name of each driver or each operator of the automatic mileage accumulation device.

(D) If used, the record of any devices employed to record the speed and/or mileage in relationship to time of the test vehicle.

(E) A record and description of all maintenance and other servicing performed, giving the date and time of the maintenance or service, the reason for it, the person authorizing it, and the names of supervisory personnel responsible for the conduct of the maintenance or service. The description shall indicate whether or not EPA specifically consented to the work and, if EPA did not, shall list the provision of this subpart which authorizes its performance.

(F) A record and description of each test performed to diagnose engine or emissions control system performance, giving the date and time of the test, the reason for it, the person authorizing it, and the names of supervisory personnel responsible for the conduct of the test.

(G) The dates and times that the vehicle was idle in storage, and in transit or transport.

(H) A brief description of any significant events affecting the vehicle during any time in the period covered by the history not described by an entry under one of the previous headings including such extraordinary events as vehicle accidents or driver speeding citations or warnings.

(ii) Each such history shall be started on the date that the first of any of the selection or build up activities in paragraph (a)(2)(i)(A) of this section occurred with respect to the certification vehicle, shall be updated each time the operational status of the vehicle changes or additional work is done on it, and shall be kept in a designated location.

(3) This paragraph shall apply to the extent practicable to certification testing of vehicles for the 1975 model year and in full to all subsequent model years.

(4) All records required to be maintained under this subpart shall be retained by the manufacturer for a period of six (6) years after issuance of all certificates of conformity to which they relate. Records may be retained as hard copy or reduced to microfilm, punch cards, etc., depending on the record retention procedures of the manufacturer, *Provided*, That in every case all the information contained in the hard copy shall be retained.

(b) The manufacturer of any new motor vehicle subject to any of the standards prescribed in this subpart shall submit to the Administrator at the time of issuance by the manufacturer copies of all instructions or explanations regarding the use, repair, adjustment, maintenance, or testing of such vehicle relevant to the control of exhaust emissions issued by the manufacturer for use by other manufacturers, assembly plants, distributors, dealers, and ultimate purchasers: *Provided*, That any material not translated into the English language need not be submitted unless specifically requested by the Administrator.

(c)(1) Any manufacturer who has applied for certification of a new motor vehicle subject to certification tests under this subpart shall admit or cause to be admitted any EPA Enforcement Officer during operating hours on presentation of credentials to any of the following:

(i) Any facility where any such tests or any procedures or activities connected with such tests are or were performed.

(ii) Any facility where any new motor vehicle which is being, was, or is to be tested is present.

(iii) Any facility where any construction process or assembly process used in the modification or build up of such a vehicle into a certification vehicle is taking place or has taken place.

(iv) Any facility where any record or other document relating to any of the above is located.

(2) Upon admission to any facility referred to in paragraph (c)(1) of this section, any EPA Enforcement Officer shall be allowed:

(i) To inspect and monitor any part or aspect of such procedures, activities, and testing facilities, including, but not limited to, monitoring vehicle preconditioning, emissions tests and mileage accumulation, maintenance, and vehicle soak and storage procedures; and to verify correlation or calibration of test equipment;

(ii) To inspect and make copies of any such records, designs, or other documents; and

(iii) To inspect and/or photograph any part or aspect of any such certification vehicle and any components to be used in the construction thereof.

(3) In order to allow the Administrator to determine whether or not production motor vehicles conform in all material respects to the design specifications which applied to those vehicles described in the application for certification for which a certificate of conformity has been issued and to standards prescribed under section 202 of the Act, any manufacturer shall admit any EPA Enforcement Officer on presentation of credentials to both:

(i) Any facility where any document, design, or procedure relating to the translation of the design and construction of engines and emission related components described in the application for certification or used for certification testing into production vehicles is located or carried on; and

(ii) Any facility where any motor vehicles to be introduced into commerce are manufactured or assembled.

(4) On admission to any such facility referred to in paragraph (c)(3) of this section, any EPA Enforcement Officer shall be allowed:

(i) to inspect and monitor any aspects of such manufacture or assembly and other procedures;

(ii) to inspect and make copies of any such records, documents, or design; and

(iii) to inspect and photograph any part or aspect of any such new motor vehicles and any component used in the assembly thereof that are reasonably related to the purpose of his entry.

(5) Any EPA Enforcement Officer shall be furnished by those in charge of a facility being inspected with such reasonable assistance as he may request to help him discharge any function listed in this paragraph. Each applicant for or recipient of certification is required to cause those in charge of a facility operated for its benefit to furnish such reasonable assistance without charge to

EPA whether or not the application controls the facility.

(6) The duty to admit or cause to be admitted any EPA Enforcement Officer applies whether or not the applicant owns or controls the facility in question and applies both to domestic and to foreign manufacturers and facilities. EPA will not attempt to make any inspections which it has been informed that local law forbids. However, if local law makes it impossible to do what is necessary to insure the accuracy of data generated at a facility, no informed judgment that a vehicle or engine is certifiable or is covered by a certificate can properly be based on that data. It is the responsibility of the manufacturer to locate its testing and manufacturing facilities in jurisdictions where this situation will not arise.

(7) For purposes of this paragraph:

(i) "Presentation of credentials" shall mean display of the document designating a person as an EPA Enforcement Officer.

(ii) Where vehicle, component, or engine storage areas or facilities are concerned, "operating hours" shall mean all times during which personnel other than custodial personnel are at work in the vicinity of the area or facility and have access to it.

(iii) Where facilities or areas other than those covered by paragraph (c)(7)(ii) of this section are concerned, "operating hours" shall mean all times during which an assembly line is in operation or all times during which testing, maintenance, mileage accumulation, production or compilation of records, or any other procedure or activity related to certification testing, to translation of designs from the test stage to the production stage, or to vehicle manufacture or assembly is being carried out in a facility.

(iv) "Reasonable assistance" includes, but is not limited to, clerical, copying, interpretation and translation services, the making available on request of personnel of the facility being inspected during their working hours to inform the EPA Enforcement Officer of how the facility operates and to answer his questions, and the performance on request of emissions tests on any vehicle which is being, has been, or will be used for certification testing. Such tests shall be nondestructive, but may require appropriate mileage accumulation. A manufacturer may be compelled to cause the personal appearance of any employee at such a facility before an EPA Enforcement Officer by written request for his appearance, signed by the Assistant Administrator for Enforcement and General Counsel, served on the manufacturer. Any such employee who has been instructed by the manufacturer to appear will be entitled to be accompanied, represented, and advised by counsel. No counsel who accompanies, represents, or advises an employee compelled to appear may accompany, represent, or advise any other person in the investigation.

(v) Any entry without 24 hours prior written or oral notification to the affected manufacturer shall be authorized in writing by the Assistant Administrator for Enforcement and General Counsel.

§ 85.376–1 Emission standards for 1976 model year light duty diesel trucks.

(a)(1) Exhaust emissions from 1975 model year light duty diesel trucks shall not exceed:

(i) *Hydrocarbons.* 2.0 gram per vehicle mile.

(ii) *Carbon monoxide.* 20 grams per vehicle mile.

(iii) *Oxides of nitrogen.* 3.1 grams per vehicle mile.

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over a driving schedule as set forth in §§ 85.376–9 through 85.376–27 and measured and calculated in accordance with those procedures.

§ 85.376–2 Application for certification.

(a) An application for a certificate of conformity to the regulations applicable to any new motor vehicle shall be made to the Administrator by the manufacturer, and shall be kept current and accurate by amendment.

(b) The application shall be in writing, signed by an authorized representative of the manufacturer, and shall include the following:

(1) Identification and description of the vehicles covered by the application and a description of their engine, emission control system and fuel system components. This shall include a detailed description of each auxiliary emission control device (AECD) to be installed in or on any certification test vehicle.

(2) Projected U.S. sales data sufficient to enable the Administrator to select a test fleet representative of the vehicles for which certification is requested.

(3) A description of the test equipment and fuel proposed to be used.

(4) A description of the proposed mileage accumulation procedure for durability testing.

(5) A statement of recommended maintenance and procedures necessary to assure that the vehicles covered by a certificate of conformity in operation conform to the regulations, and a description of the program for training of personnel for such maintenance, and the equipment required.

(6) At the option of the manufacturer, the proposed composition of the emission data and durability data test fleet.

(c) Complete copies of the application, and of any amendments thereto, and all notifications under §§ 85.376–32, 33, and 34 shall be submitted in such multiple copies as the Administrator may require.

§ 85.376–3 Approval of application for certification; test fleet selections.

(a) After a review of the application for certification and any other information which the Administrator may require, the Administrator may approve the application and select a test fleet in accordance with § 85.376–5.

(b) The Administrator may disapprove in whole or in part an application for certification for reasons including incompleteness, inaccuracy, inappropriate proposed mileage accumulation procedures, test equipment, or fuel, and incorporation of defeat devices in vehicles described by the application.

(c) Where any part of an application is rejected, the Administrator shall notify the manufacturer in writing and set forth the reasons for such rejection. Within 30 days following receipt of such notification, the manufacturer may request a hearing on the Administrator's determination. The requests shall be in writing, signed by an authorized representative of the manufacturer and shall include a statement specifying the manufacturer's objections to the Administrator's determinations, and data in support of such objections. If, after the review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue, he shall provide the manufacturer a hearing in accordance with § 85.305 with respect to such issue.

§ 85.376–4 Required data.

The manufacturer shall perform the tests required by the applicable test procedures, and submit to the Administrator the following information:

(a) Durability data on such vehicles tested in accordance with the applicable test procedures of this subpart, and in such numbers as therein specified, which will show the performance of the systems installed on or incorporated in the vehicle for extended mileage, as well as a record of all pertinent maintenance performed on the test vehicles.

(b) Emission data on such vehicles tested in accordance with the applicable emission test procedures of this subpart and in such numbers as therein specified, which will show their emissions after 0 miles and 4,000 miles of operation.

(c) A description of tests performed to ascertain compliance with the general standards in § 85.304 and the data derived from such tests.

(d) A statement that the test vehicles with respect to which data are submitted have been tested in accordance with the applicable test procedures, that they meet the requirement of such tests, and that, on the basis of such tests, they conform to the requirements of the regulations in this subpart. If such statements cannot be made with respect to any vehicle tested, the vehicle shall be identified, and all pertinent test data relating thereto shall be supplied.

§ 85.376–5 Test vehicles.

(a)(1) The vehicles covered by the application for certification will be divided into groupings of vehicles whose engines are expected to have similar emission characteristics. Each group of engines with similar emission characteristics shall be defined as a separate engine family.

(2) To be classed in the same engine family, engines must be identical in all the following respects:

(i) The cylinder bore center to center dimensions.

(ii) The dimension from the centerline of the crankshaft to the centerline of the camshaft.

(iii) The dimension from the centerline of the crankshaft to the top of the cylinder block head face.

(iv) The cylinder block configuration (air-cooled or water-cooled; L–6, 90° V–8, etc.).

(v) The location of intake and exhaust valves and the valve sizes (within a ⅛-inch range on the valve head diameter).

(vi) The method of air aspiration.

(vii) The combustion cycle.

(3) Engines identical in all the respects listed in paragraph (a)(2) of this section may be further divided into different engine families if the Administrator determines that they may be expected to have different emission characteristics. This determination will be based upon a consideration of the following features of each engine:

(i) The bore and stroke.

(ii) The surface to volume ratio of the nominally dimensioned cylinder at the top dead center position.

(iii) The intake manifold induction port size and configuration.

(iv) The exhaust manifold port size and configuration.

(v) The intake and exhaust valve sizes.

(vi) The fuel system.

(vii) The camshaft timing and ignition timing characteristics.

(4) Where engines are of a type which cannot be divided into engine families based upon the criteria listed in paragraphs (a) (2) and (3) of this section, the Administrator will establish families for those engines based upon the features most related to their emission characteristics.

(b) Emission data vehicles:

(1) Vehicles will be chosen to be operated and tested for emission data based upon the engine family groupings. Within each engine family, the requirements of this paragraph must be met.

(2) Vehicles of each engine family will be divided into engine displacement-exhaust emission control system-combinations. A projected sales volume will be established for each combination for the model year for which certification is sought. One vehicle of each combination will be selected in order of decreasing projected sales volume until 70 percent of the projected sales of a manufacturer's total production of vehicles of that engine family is represented, or until a maximum of four vehicles is selected. If any single combination represents over 70 percent, then two vehicles of that combination may be selected. The vehicle selected for each combination will be specified by the Administrator as to transmission type, fuel system, and inertia weight class.

(3) The Administrator may select a maximum of four additional vehicles within each engine family based upon features indicating that they may have the highest emission levels of the vehicles in that engine family. In selecting these vehicles, the Administrator will consider such features as the emission control system combination, induction system characteristics, ignition system characteristics, fuel system, rated horsepower, rated torque, compression ratio, inertia weight class, transmission options and axle ratios.

(4) If the vehicles selected in accordance with paragraphs (b) (2) and (3) of this section do not represent each engine-system combination, then one vehicle of each engine-system combination not represented will be selected by the Administrator. The vehicle selected shall be of the engine displacement with the largest projected sales volume of vehicles with the control system combination in the engine family and will be designated by the Administrator as to transmission type, fuel system, and inertia weight class.

(c) Durability data vehicles:

(1) A durability data vehicle will be selected by the Administrator to represent each engine-system combination. The vehicle selected shall be of the engine displacement with the largest projected sales volume of vehicles with that control system combination in that engine family and will be designated by the Administrator as to transmission type, fuel system and inertia weight class.

(2) A manufacturer may elect to operate and test additional vehicles to represent any engine-system combination. The additional vehicles must be of the same engine displacement, transmission type, fuel system and inertia weight class as the vehicle selected for that engine-system combination in accordance with the provisions of paragraph (c)(1) of this section. Notice of an intent to operate and test additional vehicles shall be given to the Administrator not later than 30 days following notification of the test fleet selection.

(d) For purposes of testing under § 85.376–7(g) the Administrator may require additional emission data vehicles and durability data vehicles identical in all material respects to vehicles selected in accordance with paragraphs (b) and (c) of this section: *Provided*, That the number of vehicles selected shall not increase the size of either the emission data fleet or the durability data fleet by more than 20 percent or one vehicle, whichever is greater.

(e) Any manufacturer whose projected sales of new motor vehicles subject to this subpart for the 1976 model year is less than 2,000 vehicles may request a reduction in the number of test vehicles determined in accordance with the foregoing provisions of this section. The Administrator may agree to such lesser number as he determines would meet the objectives of this procedure.

(f) In lieu of testing an emission data or durability data vehicle selected under paragraph (b) or (c) of this section and submitting data therefore, a manufacturer may, with the prior written approval of the Administrator, submit data on a similar vehicle for which certification has previously been obtained.

(g)(1) Where it is expected that more than 33 percent of an engine family will be equipped with an optional item, the full estimated weight of that item shall be included, if required by the Administrator, in the curb weight computation for each vehicle available with that option in the engine family. Where it is expected that 33 percent or less of the vehicles in an engine family will be equipped with an item of optional equipment, no weight for that item will be added in computing curb weight. In the case of mutually exclusive options, only the weight of the heavier option will be added in computing curb weight. Optional equipment weighing less than 3 pounds per item need not be considered.

(2) Where it is expected that more than 33 percent of an engine family will be equipped with an item of optional equipment that can reasonably be expected to influence emissions, then such items of optional equipment shall actually be installed, unless specifically excluded by the Administrator, on all emission data and durability data vehicles in the engine family on which the option is intended to be offered in production. Optional equipment that can reasonably be expected to influence emissions are the air conditioner, power steering, power brakes, and other items determined by the Administrator.

(3) Optional equipment that can reasonably be expected to influence emissions which is utilized on 33 percent or less of the vehicle in the engine family shall not be installed on any vehicle in the engine family unless specifically required under this section.

§ 85.376–6 Maintenance.

(a)(1) Scheduled maintenance on the engine, emission control system, and fuel system of durability vehicles shall be scheduled for performance during durability testing at the same mileage intervals that will be specified in the manufacturer's maintenance instructions furnished to the ultimate purchaser of the motor vehicle. Such maintenance shall be performed only under the following provisions:

(i) Scheduled major engine tuneups to manufacturer's specifications may be performed no more frequently than every 12,500 miles of scheduled driving, provided that no tuneup may be performed after 45,000 miles of scheduled driving. A scheduled major engine tuneup shall be conducted in a manner consistent with service instructions and specifications provided by the manufacturer for use by customer service personnel. A major engine tuneup shall be restricted to the following:

(*a*) Adjust low idle speed.

(*b*) Adjust valve lash if required.

(*c*) Adjust injector timing.

(*d*) Adjust governor.

(*e*) Clean and service injector tips.

(*f*) Adjust drive belt tension on engine accessories.

(*g*) Check engine bolt torque and tighten as required.

(ii) Injectors may be changed if a persistent misfire is detected.

(iii) Normal vehicle lubrication services (engine and transmission oil change and oil filter, fuel filter, and air filter

servicing) will be allowed at manufacturer's recommended intervals.

(iv) Readjustment of the engine idle settings may be performed only if there is a problem of stalling at stops.

(v) Engine idle speed may be adjusted at the 5,000-mile test point.

(vi) Any other engine, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement on durability vehicles shall be performed only with the advance approval of the Administrator.

(2) Where the Administrator agrees under § 85.376–7 to a mileage accumulation of less than 50,000 miles for durability testing, he may modify the requirement of this paragraph.

(b) Adjustment of engine idle speed may be performed once before the 4,000 mile test point on emission data vehicles. Any other engine emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement on emission data vehicles shall be performed only with the advance approval of the Administrator.

(c) Repair to vehicle components of the durability or emission data vehicle, other than the engine, emission control system, or fuel system, shall be performed only as a result of part failure or vehicle system malfunction or with the advanced approval of the Administrator.

(d) Complete emission tests (see §§ 85.376–9 to 85.376–23) shall be run, unless waived by the Administrator, before and after any vehicle maintenance which may reasonably be expected to affect emissions. These test data shall be supplied to the Administrator immediately after the tests, along with a complete record of all pertinent maintenance, including an engineering report of any malfunction diagnosis and the corrective action taken. In addition, all test data and maintenance reports shall be compiled and provided to the Administrator in accordance with § 85.376–4.

(e) If the Administrator determines that compenent failure or repairs performed have resulted in a substantial change to the engine-system combination, the vehicle shall not be used as a durability or emission data vehicle.

(f) The use of instruments, tools, or emission tests to identify malfunctioning, maladjusted, or defective engine components is not allowed unless specifically authorized by the Administrator.

§ 85.376–7 Mileage accumulation and emission measurements.

The procedure for mileage accumulation will be the Durability Driving Schedule as specified in Appendix IV to this part. A modified procedure may also be used if approved in advance by the Administrator. Except with the advance approval of the Administrator, all vehicles will accumulate mileage at a measured curb weight which is within 100 pounds of the estimated curb weight. If the loaded vehicle weight is within 100 pounds of being included in the next higher inertia weight class as specified in § 85.376–13(d), the manufacturer may elect to conduct the respective emission data vehicle test at the inertia weight corresponding to the higher loaded vehicle weight.

(a) Emission data vehiclese: Each emission data vehicle shall be driven 4,000 miles with all emission control systems installed and operating. Emission tests shall be conducted at zero miles and 4,000 miles.

(b) Durability data vehicles: Each durability data vehicle shall be driven with all emission control systems installed and operating, for 50,000 miles or such lesser distance as the Administrator may agree to as meeting the objectives of this procedure. Complete emission tests (see § 85.376–10 through § 85.376–23) shall be made at the following mileage points: 0, 5,000, 10,000, 15,000, 20,000, 25,000, 30,000, 35,000, 40,000, 45,000, and 50,000.

(c) All tests required by this subpart to be conducted after 5,000 miles of driving for durability vehicles and 4,000 miles for emission data vehicles must be conducted at any accumulated mileage within 250 miles of each of those test points.

(d) (1) The results of each emission test shall be supplied to the Administrator immediately after the test. The manufacturer shall furnish to the Administrator explanation for voiding any test. The Administrator will determine if voiding the test was appropriate based upon the explanation given by the manufacturer for the voided test. If a manufacturer conducts multiple tests at any test point at which the data are intended to be used in the calculation of the deterioration factor, the number of tests must be the same at each point and may not exceed three valid tests. Tests between test points may be conducted as required by the Administrator. Data from all tests (including voided tests) shall be air posted to the Administrator within 24 hours (or delivered within three working days). In addition, all test data shall be compiled and provided to the Administrator in accordance with § 85.376–4. Where the Administrator conducts a test on a durability vehicle at a prescribed test point, the results of each test will be used in the calculation of the deterioration factor.

(2) The results of all emission test results shall be recorded and reported to the Administrator using three significant figures. These numbers shall be rounded in accordance with the "Rounding-Off Method" specified in ASTM E 29–67.

(e) Whenever the manufacturer proposes to operate and test a vehicle which may be used for emission or durability data, he shall provide the zero mile test data to the Administrator and make the vehicle available for such testing under § 85.376–29 as the Administrator may require before beginning to accumulate mileage on the vehicle. Failure to comply with this requirement will invalidate all test data submitted for this vehicle.

(f) Once a manufacturer begins to operate an emission data or durability data vehicle, as indicated by compliance with paragraph (e) of this section, he shall continue to run the vehicle to 4,000 miles or 50,000 miles, respectively, and the data from the vehicle will be used in the calculations under § 85.376–28. Discontinuation of a vehicle shall be allowed only with the written consent of the Administrator.

(g) (1) The Administrator may elect to operate and test any test vehicle during all or any part of the mileage accumulation and testing procedure. In such cases, the manufacturer shall provide the vehicle(s) to the Administrator with all information necessary to conduct this testing.

(2) The test procedures (§§ 85.376–9 to 85.376–23) will be followed by the Administrator. The Administrator will test the vehicles at each test point. Maintenance may be performed by the manufacturer under such conditions as the Administrator may prescribe.

(3) The data developed by the Administrator for the engine system combination shall be combined with any applicable data supplied by the manufacturer on other vehicles of that combination to determine the applicable deterioration factors for the combination. In the case of a significant discrepancy between data developed by the Administrator and that submitted by the manufacturer the Administrator's data shall be used in the determination of deterioration factors.

(h) Emission testing of any type with respect to any certification vehicle other than that specified in this subpart is not allowed except as such testing may be specifically authorized by the Administrator.

§ 85.376–8 Special test procedures.

The Administrator may, on the basis of a written application therefor by a manufacturer, prescribe test procedures, other than those set forth in this subpart, for any motor vehicle which he determines is not susceptible to satisfactory testing by the procedures set forth herein.

§ 85.376–9 Test procedures.

The procedures described in this and subsequent sections will be the test program to determine the conformity of diesel light duty trucks with the standards set forth in § 85.376.1.

(a) The test consists of prescribed sequences of fueling, parking, and operating conditions. The exhaust gases generated during vehicle operation are diluted with air and sampled continuously for analysis of diesel exhaust hydrocarbon and subsequent analysis of other specific components by prescribed techniques. The test applies to vehicles equipped with catalytic or direct flame afterburners, other control systems or to uncontrolled vehicles and engines. All test phases are conducted with an ambient temperature range between 68° and 86° F.

(b) The exhaust emission test is designed to determine hydrocarbon, carbon monoxide, and oxides of nitrogen mass emissions while simulating an average trip in an urban area of 7.5 miles. The test consists of engine startups and vehi-

cle operation on a chassis dynamometer through a specified driving schedule, as described in Appendix I to this part. Using a constant volume (variable dilution) sampler, a proportional part of the diluted exhaust gas is analyzed continuously for hydrocarbons and an additional proportional part of the diluted exhaust gas is collected in a bag for subsequent analysis of the other components.

(c) Except for component malfunction or failure, all emission control systems installed on or incorporated in a new motor vehicle shall be functioning during all procedures in this subpart. Component malfunction or failure shall be repaired in accordance with § 85.376–6.

§ 85.376–10 Diesel fuel specifications.

(a) The diesel fuels employed for testing shall be clean and bright, with pour and cloud points adequate for operability. The fuels may contain nonmetallic additives as follows: Cetane improver, metal deactivator, antioxidant, dehazer, antirust, pour depressant, dye, and dispersant.

(b) Fuel meeting the following specifications, or substantially equivalent specifications approved by the Administrator, shall be used in exhaust emissions testing. The grade of fuel recommended by the engine manufacturer, commercially designated as "Type 1–D" or "Type 2–D", shall be used.

Item	ASTM test method No.	Type 1–D	Type 2–D
Cetane	D 613	48–54	42–50
Distillation range	D 86		
IBP, ° F		330–390	340–400
10-percent point, ° F		370–430	400–460
50-percent point, ° F		410–480	470–540
90-percent point, ° F		460–520	550–610
EP, ° F		500–560	580–660
Gravity, ° API	D 287	40–44	33–37
Total Sulfur, percent	D 129 or D 2622	0.05–0.20	0.2–0.5
Hydrocarbon composition	D 1319		
Aromatics, percent		8–15	27 (Min.)
Paraffins, Naphthenes, Olefins		Remainder.	Remainder.
Flashpoint, ° F. (minimum)	D 93	120	130
Viscosity, Centistokes	D 445	1.6–2.0	2.0–3.2

(c) Fuel meeting the following specifications, or substantially equivalent specifications approved by the Administrator, shall be used in service accumulation. The grade of fuel recommended by the engine manufacturer, commercially designated as "Type 1–D" or "Type 2–D", shall be used.

Item	ASTM test method No.	Type 1–D	Type 2–D
Cetane	D 613	48–54	42–55
Distillation range	D 86		
IBP, ° F		330–390	340–410
10-percent point, ° F		370–430	400–470
50-percent point, ° F		410–480	470–540
90-percent point, ° F		460–520	550–610
EP, ° F		500–560	580–660
Gravity, ° API	D 287	40–44	33–40
Total Sulfur, percent	D 120 or D 2622	0.05–0.20	0.2–0.5
Flash point, ° F. (minimum)	D 93	120	130
Viscosity, Centistokes	D 445	1.6–2.0	2.0–3.2

(d) Other Petroleum Distillation Fuel Specifications:

(i) Other petroleum distillate fuels may be used for testing and service accumulation provided they are commercially available, and

(ii) Information, acceptable to the Administrator, is provided to show that only the designated fuel would be used in customer service, and

(iii) Use of a fuel listed under paragraphs (b) and (c) of this section would have a detrimental effect on emissions or durability, and

(iv) Written approval from the Administrator of the fuel specifications was provided prior to the start of testing.

(e) The specification range of the fuels to be used under paragraphs (b), (c), and (d) of this section shall be reported in accordance with § 85.376–2(b)(3).

§ 85.376–11 Vehicle preconditioning.

Vehicles to be tested for compliance with the exhaust emission standards of this part shall be preconditioned as follows:

(a) The fuel tank of the test vehicle shall be drained and charged with the specified test fuel, § 85.376–10(b), to the prescribed "tank fuel volume," defined in § 85.302. The vehicle manufacturer shall provide additional fittings and adapters, as required to accommodate a fuel drain at the lowest point possible in the tank as installed on the vehicle. Test fuel, when charged to the tank shall be at ambient temperature, § 85.376–9(a).

(b) The test vehicle shall be placed on the dynamometer and operated over a simulated trip, according to the applicable requirements and procedures of §§ 85.376–12 to 85.376–17 except that the engine need not be cold when starting the run on the dynamometer and only a single trip of 7.5 miles shall be run. The test vehicle may be used to set dynamometer horsepower, if necessary.

(c) The engine and cooling fan shall be stopped upon completion of the dynamometer operation and the vehicle permitted to soak either on or off the dynamometer stand for a period of not less than 12 hours prior to the dynamometer test.

§ 85.376–12 Dynamometer driving schedule.

(a) The dynamometer driving schedule to be followed consists of a nonrepetitive series of idle, acceleration, cruise, and deceleration modes of various time sequences and rates. The driving schedule is defined by a smooth transition through the speed vs. time relationships listed in Appendix I to this part. The time sequence begins upon starting the vehicle according to the startup procedure described in § 85.376–17.

(b) The speed tolerance at any given time on the dynamometer driving schedule prescribed in Appendix I to this part or as printed on a driver's aid chart approved by the Administrator when conducted to meet the requirements of 85.376–13, is defined by upper and lower limits. The upper limit is 2 m.p.h. higher than the highest point on the trace within 1 second of the given time. The lower limit is 2 m.p.h. lower than the lowest point on the trace within 1 second of the given time. Speed variations greater than the tolerances (such as occur when shifting manual transmission vehicles) are acceptable provided they occur for less than 2 seconds on any one occasion. Speeds lower than those prescribed are acceptable provided the vehicles is operated at maximum available power during such occurrences. Further, speed deviations from those prescribed due ot stalling are acceptable: *Provided,* The provisions of § 85.376–17 (d) are adhered to. When conducted to meet the requirements of § 85.376–11, the speed tolerance shall be as specified above, except that the upper and lower limits shall be 4 m.p.h.

§ 85.376–13 Dynamometer procedure.

(a) The dynamometer run consists of two tests, a "cold" start test after a minimum 12 hour soak and a "hot" start test with a 10 minute soak between the two tests. Engine startup, operation over the driving schedule, and engine shutdown make a complete cold start test. Engine startup and operation over the first 505 seconds of the driving schedule complete the hot start test. The exhaust emissions are diluted with air to a constant volume and a portion is sampled continuously during each test. Diesel hydrocarbons are analyzed continuously, with manual or electronic integration, during each test. The composite (flow integrated) samples collected in bags are analyzed for carbon monoxide, carbon dioxide, and oxides of nitrogen. A parallel sample of dilution air is analyzed for hydrocarbon, carbon monoxide and oxides of nitrogen.

(b) During dynamometer operation, a fixed speed cooling fan shall be positioned so as to direct cooling air to the vehicle in an appropriate manner with the engine compartment cover open. The fan capacity shall normally not exceed 5,300 c.f.m. If, however, the manufacturer can show that during field operation the vehicle received additional cool-

ing, the fan capacity may be increased or additional fans used if approved in advance by the Administrator. In the case of vehicles with front engine compartments, the fan(s) shall be squarely positioned between 8 and 12 inches in front of the cooling air inlets (grill). In the case of vehicles with rear engine compartments (or if special designs make the above impractical), the cooling fan(s) shall be placed in a position to provide sufficient air to maintain engine cooling.

(c) The vehicle shall be nearly level when tested in order to prevent abnormal fuel distribution.

(d) Flywheels, electrical or other means of simulating inertia shall be used. If the equivalent inertia specified in the following table is not available on the dynamometer being used, the next higher equivalent inertis (not to exceed 250 lbs.) available shall be used.

Loaded vehicle weight, pounds	Equivalent inertia weight, pounds	Road load power at 50 m.p.h. horsepower
Up to 1,125	1,000	5.9
1,126 to 1,375	1,250	6.5
1,375 to 1,625	1,500	7.1
1,626 to 1,875	1,750	7.7
1,876 to 2,125	2,000	8.3
2,126 to 2,375	2,250	8.8
2,376 to 2,625	2,500	9.4
2,626 to 2,875	2,750	9.0
2,826 to 3,250	3,000	10.3
3,251 to 3,750	3,500	11.2
3,751 to 4,250	4,000	12.0
4,251 to 4,750	4,500	12.7
4,751 to 5,250	5,000	13.4
5,251 to 5,750	5,500	13.9
5,751 to above	5,500	14.4

(e) Power absorption unit adjustment:

(1) The power absorption unit shall be adjusted to reproduce road load power at 50 m.p.h. true speed. The indicated road load power setting shall take into account the dynamometer friction. The relationship between road load (absorbed) power and indicated road load power for a particular dynamometer shall be determined by the procedure outlined in Appendix II to this part or other suitable means.

(2) The road load power listed in the table above shall be used or the vehicle manufacturer may determine the road load power by the following procedure and request its use:

(i) Measuring the fuel flow rate of a representative vehicle of the same equivalent inertia weight class, when operated on a level road under balanced wind conditions at a true speed of 50 m.p.h., and

(ii) Noting the dynamometer indicated road load horsepower setting required to reproduce that fuel flow rate when the same vehicle is operated on the dynamometer at a true speed of 50 m.p.h. The tests on the road and on the dynamometer shall be performed with the same vehicle ambient absolute pressure (usually barometric), i.e. within ±5 mm. Hg.

(iii) The road load power shall be determined according to the procedure outlined in Appendix II to this part and adjusted according to the following if applicable.

(3) Where it is expected that more than 33 percent of the vehicles in an engine family will be equipped with air-conditioning, the road load power listed above or as determined in paragraph (e)(2) of this section shall be increased by 10 percent for testing all test vehicles representing such engine family.

(f) The vehicle speed (m.p.h.) as measured from the dynamometer rolls shall be used for all conditions. A speed vs. time recording, as evidence of dynamometer test validity, shall be supplied on request of the Administrator.

(g) Practice runs over the prescribed driving schedule may be performed to find the minimum accelerator pedal action to maintain the proper speed-time relationship.

NOTE: When using two-roll dynamometers a truer speed-time trace may be obtained by minimizing the rocking of the vehicle in the rolls. The rocking of the vehicle changes the tire rolling radius on each roll. The rocking may be minimized by restraining the vehicle horizontally (or nearly so) by using a cable and winch.

(h) The drive wheel tires may be inflated up to 45 p.s.i.g. in order to prevent tire damage. The drive wheel tire pressure shall be reported with the test results.

(i) If the dynamometer has not been operated during the 2-hour period immediately preceding the test it shall be warmed up for 15 minutes by operating it at 30 m.p.h. using a nontest vehicle.

(j) If the dynamometer horsepower must be adjusted manually, it shall be set within 1 hour prior to the exhaust emissions test phase. The test vehicle shall not be used to make this adjustment. Dynamometers using automatic control of preselectable power settings may be set anytime prior to the beginning of the emissions test.

§ 85.376–14 Three-speed manual transmissions.

(a) All test conditions except as noted shall be run in highest gear.

(b) Cars equipped with free wheeling or overdrive units shall be tested with this unit (free wheeling or overdrive) locked out of operation.

(c) Idle shall be run with transmission in gear and with clutch disengaged (except first idle; see § 85.376–17).

(d) The vehicle shall be driven with minimum accelerator pedal movement to maintain the desired speed.

(e) Acceleration modes shall be driven smoothly with the shift speeds as recommended by the manufacturer. If the manufacturer does not recommend shift speeds, the vehicle shall be shifted from first to second gear at 15 m.p.h. and from second to third gear at 25 m.p.h. The operator shall release the accelerator pedal during the shift, and accomplish the shift with minimum time. If the vehicle cannot accelerate at the specified rates, the vehicle shall be accelerated at maximum available power until the vehicle speed reaches the speed at which it should be at that time during the test.

(f) The deceleration modes shall be run with clutch engaged and without shifting gears from the previous mode, using brakes or accelerator pedal as necessary to maintain the desired speed. For those modes which decelerate to zero, the clutch shall be depressed when the speed drops below 15 m.p.h. when engine roughness is evident, or when engine stalling is imminent.

(g) Downshifting is allowed at the beginning of or during a power mode if recommended by the manufacturer or if the engine obviously is lugging.

§ 85.376–15 Four-speed and five-speed manual transmissions.

(a) Use the same procedure as for three-speed manual transmissions for shifting from first to second gear and from second to third gear. If the manufacturer does not recommend shift speeds, the vehicle shall be shifted from third to fourth gear at 40 m.p.h. Fifth gear may be used at the manufacturer's option.

(b) If transmission ratio in first gear exceeds 5:1, follow the procedure for three- or four-speed manual transmission vehicles as if the first gear did not exist.

§ 85.376–16 Automatic transmissions.

(a) All test conditions shall be run with the transmission in "Drive" (highest gear). Automatic stick-shift transmissions may be shifted as manual transmissions at the option of the manufacturer.

(b) Idle modes shall be run with the transmission in "Drive" and the wheels braked (except first idle; see § 85.376–17).

(c) The vehicle shall be driven with minimum accelerator pedal movement to maintain the desired speed.

(d) Acceleration modes shall be driven smoothly allowing the transmission to shift automatically through the normal sequence of gears. If the vehicle cannot accelerate at the specified rates, the vehicle shall be accelerated at maximum available power until the vehicle speed reaches the speed at which it should be at that time during the driving schedule.

(e) The deceleration modes shall be run in gear using brakes or accelerator pedal as necessary to maintain the desired speed.

§ 85.376–17 Engine starting and restarting.

(a) The engine shall be started according to the manufacturre's recommended starting procedures. The initial 20-second-idle period shall begin when the engine starts. The transmission shall be placed in gear 15 seconds after the engine is started. If necessary, braking may be employed to keep the drive wheels from turning.

(b) If the vehicle does not start after 10 seconds of cranking, cranking shall

cease and the reason for failure to start shall be determined. The revolution counter on the constant volume sampler and the hydrocarbon integrator (see § 85.376–21 *Dynamometer test runs*) shall be turned off and the sample solenoid valves placed in the "dump" position during this diagnostic period. In addition, either the positive displacement pump should be turned off or the exhaust tube disconnected from the tailpipe during the diagnostic period. If failure to start is an operational error, the vehicle shall be rescheduled for testing from a cold start. If failure to start is caused by vehicle malfunction, corrective action of less than 30 minutes duration may be taken and the test continued. The sampling system shall be reactivated at the same time cranking is started. When the engine starts, the driving schedule timing sequence shall begin. If failure to start is caused by vehicle malfunction and the vehicle cannot be started, the test shall be voided, the vehicle removed from the dynamometer, corrective action taken, and the vehicle rescheduled for test. The reason for the malfunction (if determined) and the corrective action taken shall be reported.

(c) If the engine "false starts", the operator shall repeat the recommended starting procedure.

(d) Stalling:

(1) If the engine stalls during an idle period, the engine shall be restarted immediately and the test continued. If the engine cannot be started soon enough to allow the vehicle to follow the next acceleration as prescribed, the driving schedule indicator shall be stopped. When the vehicle restarts the driving schedule indicator shall be reactivated.

(2) If the engine stalls during some operating mode other than idle, the driving schedule indicator shall be stopped, the vehicle restarted, accelerated to the speed required at that point in the driving schedule and the test continued.

(3) If the vehicle will not restart within 1 minute, the test shall be voided, the vehicle removed from the dynamometer, corrective action taken, and the vehicle rescheduled for test. The reason for the malfunction (if determined) and the corrective action taken shall be reported.

§ 85.376–18 Sampling and analytical system (exhaust emissions).

(a) *Schematic drawings.* The following figures (Figs. D 376–1, D 376–2, and D 376–3) are schematic drawings of the exhaust gas sampling and analytical systems which will be used for testing under the regulations in this part. Since various configurations of the required components can produce accurate results, these schematic drawings are not to be interpreted literally and exact conformance is not mandatory. Additional components such as instruments, valves, solenoids, pumps, and switches may be used to provide additional information and coordinate the functions of the component systems.

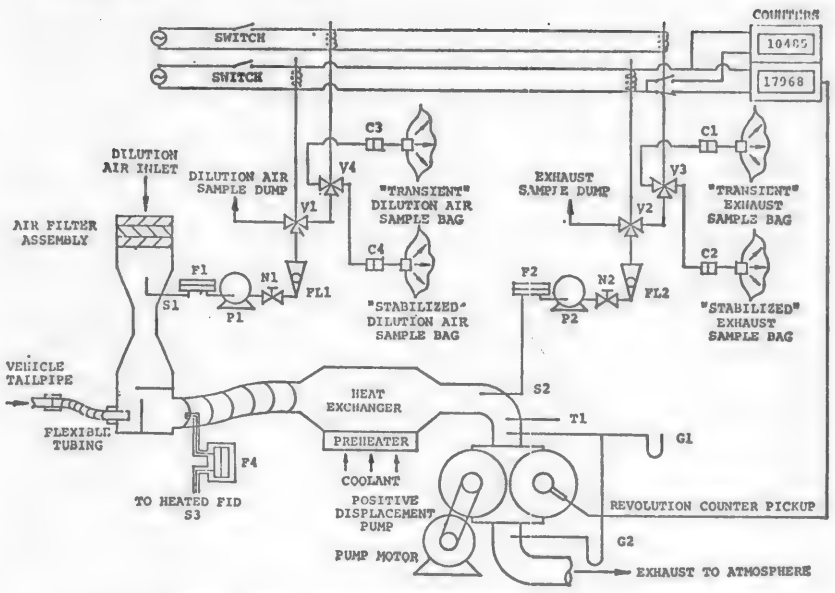

Figure D376-1 Exhaust Gas Sampling System

(b) *Component description (exhaust gas sampling system).* The following components will be used in the exhaust gas sampling system for testing under the regulations in this part. See Figure D 376–1. Other types of constant volume samplers may be used if shown to yield equivalent results, and if approved in advance by the Administrator.

(1) A dilution air filter assembly consisting of a particulate (paper) filter to remove solid matter from the dilution air and thus increase the life of the charcoal filter; a charcoal filter to reduce and stabilize the background hydrocarbon level; and a second particulate filter to remove charcoal particles from the air stream.

(2) A leak-tight connector and tube to the vehicle tailpipe. The tubing shall be sized and connected in such a manner that the static pressure variations in the vehicle tailpipe(s) remain within ±5 inches of water of the status pressure variations measured during a dynamometer driving cycle with no connection to the tailpipe(s). Sampling systems capable of tolerances to ±1 inch of water will be used by the Administrator if a written request by the manufacturer substantiates the need for this closer tolerance.

(3) A heating system to preheat the heat exchanger to within ±10° F. of its operating temperature before the test begins.

(4) A heat exchanger capable of limiting the gas mixture temperature variation during the entire test to ±10° F. as measured at a point immediately ahead of the positive displacement pump.

(5) A positive displacement pump to pump dilute exhaust mixture. The pump capacity (300 to 350 c.f.m. is sufficient for testing most vehicles) shall be large enough to virtually eliminate water condensation in the system. See Appendix III to this part for one flow calibration technique. Other suitable calibration techniques may be used if approved in advance by the Administrator.

(6) Temperature sensor (T1) with an accuracy of ±2° F. to allow continuous recording of the temperature of the dilute exhaust mixture entering the positive displacement pump. (See § 85.376–19(k)).

(7) Gage (G1) with an accuracy of ±3 mm. Hg to measure the pressure depression of the dilute exhaust mixture entering the positive displacement pump, relative to atmospheric pressure.

(8) Gage (G2) with an accuracy of ±3 mm. Hg to measure the pressure increase across the positive displacement pump.

(9) Sample probes (S1, S2, and S3) pointed upstream to collect samples from the dilution air stream and the dilute exhaust mixture. Additional sample probes may be used, for example, to obtain continuous concentration traces of the dilute exhaust stream. In such case the sample flow rate, in standard cubic feet per test phase, must be added to the calculated dilute exhaust volume. The position of the sample probes in Figure D 376–1 is pictorial only. The heated sample line (S3) between the sampling point and the analyzer shall be as short as possible.

(10) Filters (F1 and F2) to remove particulate matter from dilution air and dilute exhaust samples.

(11) Pumps (P1 and P2) to pump the dilution air and dilute exhaust into their respective sample collection bags.

(12) Flow control valves (N1 and N2) to regulate flows to sample collecton bags, at constant flow rates. The minimum sample flow rate shall be 10 c.f.h.

(13) Flowmeters (FL1 and FL2) to insure, by visual observation, that constant flow rates are maintained throughout the test.

(14) Three-way solenoid valves (V1, V2, V3, and V4) to direct sample streams to either their respective bags or overboard.

(15) Quick-connect, leak-tight fittings (C1, C2, C3, and C4) with automatic shutoff on bag side to attach sample bags to sample system.

(16) Sample collection bags for dilution air and exhaust samples of sufficient capacity so as not to impede sample flow.

(17) Revolution counters to count the revolutions of the positive displacement pump while each test phase is in progress and samples are being collected.

(c) *Component description (exhaust gas batch analytical system).* The following components will be used in the exhaust gas batch analytical system for testing under the regulations in this part. The analytical system provides for the determination of carbon monoxide and carbon dioxide concentrations by nondispersive infrared (NDIR) analysis and the determination of oxides of nitrogen concentrations by chemiluminescence (CL) analysis in dilute exhaust samples. The chemiluminescence method of analysis requires that the nitrogen dioxide present in the sample be converted to nitric oxide before analysis. Other types of analyzers may be used if shown to yield equivalent results and if approved in advance by the Administrator. See Figure D 376–2.

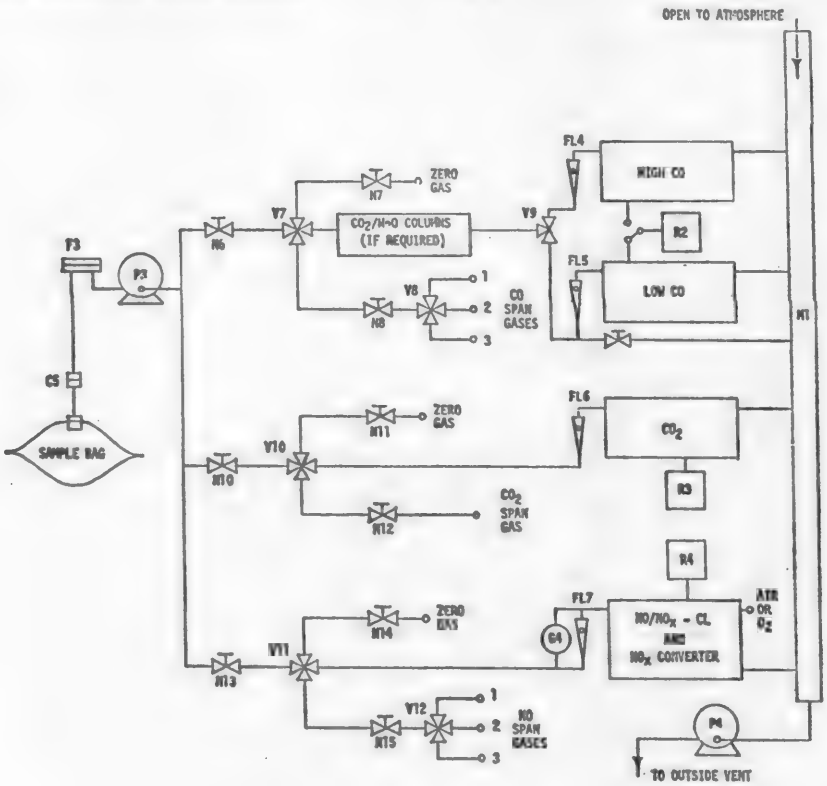

Figure D376-2 - EXHAUST GAS BATCH ANALYTICAL SYSTEM

(1) Quick-connect, leak-tight fitting (C5) to attach sample bags to analytical system.

(2) Filter (F3) to remove any residual particulate matter from the collected sample.

(3) Pump (P3) to transfer samples from the sample bags to the analyzers.

(4) Selector valves (V7, V8, V9, V10, V11, and V12) for directing samples, span gases or zeroing gases to the analyzers.

(5) Flow control valves (N6, N7, N8, N9, N10, N11, N12, N13, N14, and N15) to regulate the gas flow rates.

(6) Flowmeters (FL4, FL5, FL6, and FL7) to indicate gas flow rates.

(7) Pressure gauge (G4) to facilitate greater precision in setting and reading flowrate.

(8) Manifold (M1) to collect the expelled gases from the analyzers.

(9) Pump (P4) to transfer expelled gases from the collection manifold to a vent external to the testroom (optional).

(10) Analyzers to determine carbon monoxide, carbon dioxide and oxides of nitrogen concentrations (see 85.175–20(a).

(11) Sample conditioning column containing $CaSO_4$, or indicating silica gel to remove water vapor and containing ascarite to remove carbon dioxde from the CO analyses stream.

NOTE: If CO instruments which are essentially free of CO_2 and water vapor interference are used, the use of the conditioning column may be deleted. See § 85.376–19(m) and § 85.376–23(c).

A CO instrument will be considered to be essentially free of CO_2 and water vapor interference if its response to a mixture of 3 percent CO_2 in N_2, which has been bubbled through water at room temperature (68°–86°F.), produces an equivalent CO response, as measured on the most sensitive CO range, which is less than 1 percent of full scale CO concentration on instrument ranges above 300 ppm CO or less than 3 ppm on instrument ranges below 300 ppm CO.

(12) Recorders (R1, R2, and R3) or digital printers to provide permanent records of calibration, spanning and sample measurements; or in those facilities where computerized data acquisition systems are incorporated, the computer facility printout may be used.

(d) *Component description (exhaust gas continuous analytical system).* The following components will be used in the exhaust gas continuous analytical

system for testing under the regulations in this part. This analytical system provides for the continuous determination of exhaust hydrocarbon concentration by heated flame ionization detector (HFID) analysis. Other types of analyzers may be used if shown to yield equivalent results and if approved in advance by the Administrator. See Figure D-376-3.

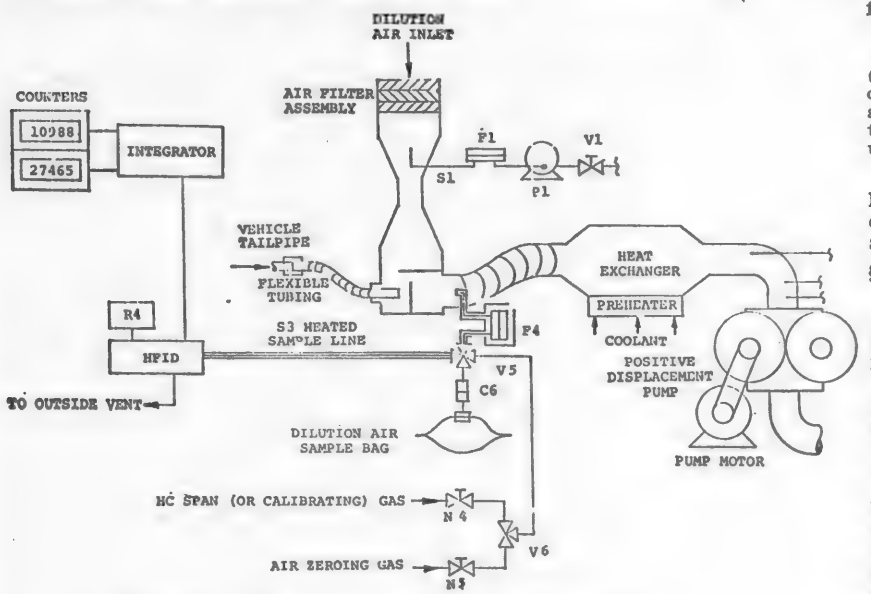

Figure D376-3 Diesel Hydrocarbon Continuous Analysis System

(1) Heated continuous sampling line (S3).

(2) Heated filter (F4) to remove particulate matter from heated hydrocarbon sample.

(3) Selector valves (V15, and V16) for directing the continuous dilute exhaust sample, dilution air bag sample, span or zeroing gases to the analyzers.

(4) Quick-connect, leak-tight fitting (C6) to attach dilution air sample bag to analytical system.

(5) Heated hydrocarbon analyzer (HFID) complete with heated pump, filter, and flow control system. The response time of this instrument shall be less than 1 second for 90 percent of full scale response. Sample transport time from sampling point to inlet of instrument shall be less than 4 seconds.

(6) Chart recorder (R4), chart recorder (R4) and analog integrator with two readouts, or chart recorder (R4) and on-line digital computer for manual or electronic integration of analyzer output signal during the three operating phases of the test.

(7) Flow control valves (N13 and N14) to regulate the gas flow rates.

§ 35.376–19 Information to be recorded.

The following information shall be recorded with respect to each test:

(a) Test number.

(b) System or device tested (brief description).

(c) Date and time of day for each part of the test schedule.

(d) Instrument operator.

(e) Driver or operator.

(f) Vehicle: Make—Vehicle Identification number—Model year—Transmission type—Odometer reading—Engine displacement—Engine family—Idle r.p.m.—Inertia loading—Actual curb weight recorded at 0 miles—Actual road load HP. at 50 m.p.h. and drive wheel tire pressure.

(g) Indicated road load power absorption at 50 m.p.h. and dynamometer serial number. As an alternative to recording the dynamometer serial number, a reference to a vehicle test cell number may be used, with the advance approval of the Administrator: *Provided,* The test cell records show the pertinent information.

(h) All pertinent instrument information such as tuning—gain—serial numbers—detector numbers—range. As an alternative, a reference to a vehicle test cell number may be used with the advance approval of the Administrator, provided test cell calibration records show the pertinent instrument information.

(i) Recorder charts: Identify zero, span, exhaust gas, and dilution air sample traces.

(j) Test cell barometric pressure, ambient temperature and humidity.

NOTE: A central laboratory barometer may be used: *Provided,* That individual test cell barometric pressures are shown to be within ±0.1 percent of the barometric pressure at the central barometer location.

(k) Pressure of the mixture of exhaust and dilution air entering the postive displacement pump, the pressure increase across the pump, and the temperature set point of the temperature control system. The sample temperature at the inlet to the pump may be measured if desired, to verify that the temperature variations are within ±5° F. of the set point.

(l) The number of revolutions of the positive displacement pump accumulated while the test is in progress and exhaust flow samples are being collected.

(m) The humidity of the dilution air.

NOTE: If conditioning columns are not used (see § 85.376–18(c)(11)), this measurement can be deleted. If the conditioning columns are used and the dilution air is taken from the test cell, the ambient humidity can be used for this measurement.

(n) Temperature set point of the heated sample line and heated hydrocarbon detector temperature control system.

§ 85.376–20 Analytical system calibration and sample handling.

(a) Calibrate the analytical assembly at least once every 30 days. Use the same flow rate as when analyzing samples.

(1) Adjust analyzers to optimize performance. Operate heated hydrocarbon analyzer, sampling line, and filter to ±10° F in the emperature range of 300 to 390° F.

(2) Zero the hydrocarbon analyzer with zero grade air and the carbon monoxide, carbon dioxide, and oxides of nitrogen analyzers with zero grade nitrogen. The allowable zero gas impurity concentrations should not exceed 1 p.p.m. equivalent carbon response, 1 p.p.m. carbon monoxide, 300 p.p.m. (0.03 mole percent) carbon dioxide, and 0.1 p.p.m. nitric oxide.

(3) Set the CO and CO_2 analyzer gains to give the desired ranges. Select the desired attenuation scale of the HC analyzer, set the sample capillary flow rate by adjusting the back pressure regulator, and adjust the electronic gain control, if provided, to give the desired range. Select the desired scale of the NO_x analyzer and adjust the phototube high voltage supply or amplifier gain to give the desired range.

(4) Calibrate the HC analyzer with propane (air diluent) gases having nominal concentrations equal to 50 and 100 percent of full scale. Calibrate the CO analyzer with carbon monoxide (nitrogen diluent) gases and the CO_2 analyzer with carbon dioxide (nitrogen diluent) gases having nominal concentrations equal to 10, 25, 40, 50, 60, 70, 85, and 100 percent of full scale. Calibrate the NO_x analyzer with nitric oxide (nitrogen diluent) gases having nominal concentrations equal to 50 and 100 percent of full scale. The actual concentrations should be known to with ±2 percent of the true values.

(5) Compare values obtained on the CO and CO_2 analyzers with previous calibration curves. Any significant change reflects some problem in the system. Locate and correct problem, and recalibrate. Use best judgment in selecting curves for data reduction.

(6) NO_x converter efficiency determination. The apparatus described and illustrated in Figure D 376–7 or Figure D 376–8 is to be used to determine the conversion efficiency of devices that convert NO_x to NO.

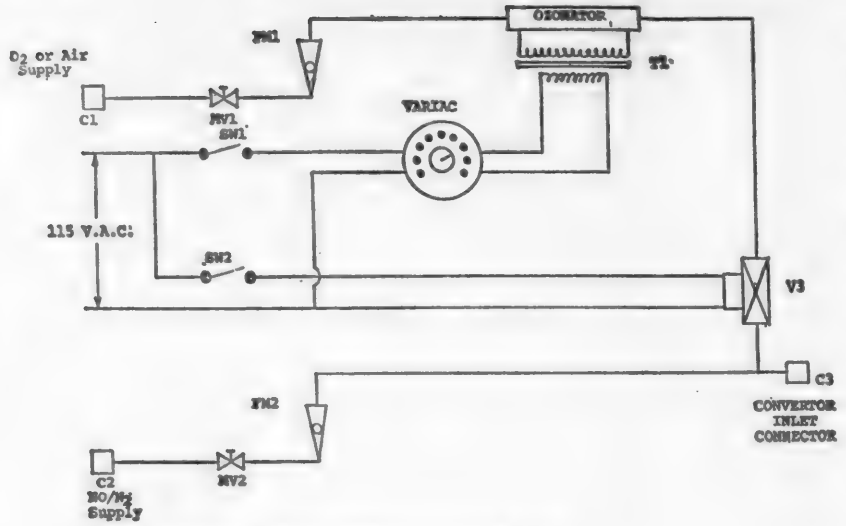

Figure D376-7 - NOx CONVERTER EFFICIENCY DETECTOR

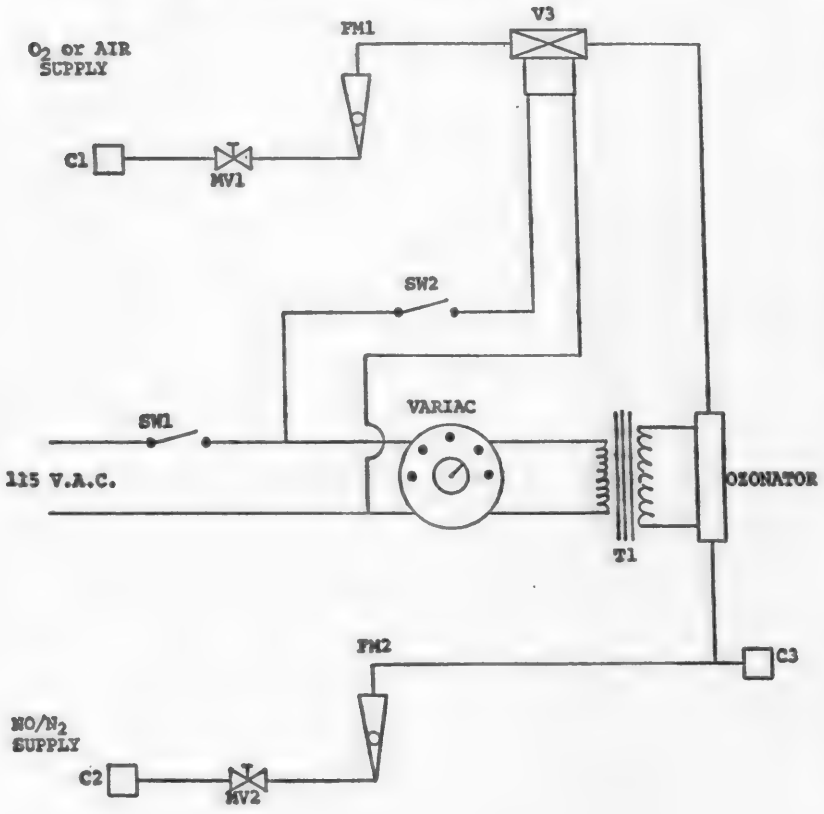

FIGURE D376-8 - NOx CONVERTER EFFICIENCY DETECTOR

The following procedure is to be used for determining the values to be used in Equation (A).

(i) Attach the NO/N_2 supply (150–250 p.p.m.) at C2, the O_2 supply at C1 and the analyzer inlet connection to the efficiency detector at C3. If lower concentrations of NO are used, air may be used in place of O_2 to facilitate better control of the NO_2 generated during step (iv).

(ii) With the efficiency detector variac off, place the NO_x converter in bypass mode and close valve V3. Open valve MV2 until sufficient flow and stable readings are obtained at the analyzer. Zero and span the analyzer output to indicate the value of the NO concentration being used. Record this concentration.

(iii) Open valve V3 (on/off flow control solenoid valve for O_2) and adjust valve MV1 (O_2 supply metering valve) to blend enough O_2 to lower the NO concentration (ii) about 10 percent. Record this concentration.

(iv) Turn on the ozonator and increase its supply voltage until the NO concentration of (iii) is reduced to about 20 percent of (ii). NO_2 is now being formed from the NO+N_2 reaction. There must always be at least 10 percent unreacted NO at this point. Record this concentration.

(v) When a stable reading has been obtained from (iv), place the NO_x converter in the convert mode. The analyzer will now indicate the total NO_x concentration. Record this concentration.

(vi) Turn off the ozonator and allow the analyzer reading to stabilize. The mixture NO+O_2 is still passing through the converter. This reading is the total NO_x concentration of the dilute NO span gas used at step (iii). Record this concentration.

(vii) Close valve V3. The NO concentration should be equal to or greater than the reading of (ii) indicating whether the NO contains any NO_2. Calculate the efficiency of the NO_2 converter by substituting the concentrations obtained during the test into Equation (A).

EQUATION A

$$\%\text{Eff.} = \frac{(v)-(iv)}{(vi)-(iv)} \times 100\%$$

The efficiency of the converter should be greater than 90 percent. Adjustment of the converter temperature may be needed to maximize the efficiency. Efficiency checks should be made on each analyzer range using an NO span gas concentration appropriate to the instrument range. See alternate procedure in paragraph (a)(6)(viii) of this section.

(viii) Alternative to paragraph (a)(6)(vii): Close valve V3. The NO concentration should be equal to or greater than the reading of (ii) indicating whether the NO contains any NO_2.

Calculate the efficiency of the NO_2 converter by substituting the concentrations obtained during the test into Equation (B).

EQUATION B

$$\%\text{Eff.} = \left[1 + \frac{(v - vi)}{(iii - iv)}\right] \times 100\%$$

The efficiency of the converter should be greater than 90 percent. Adjusting the converter temperature may be needed to maximize the efficiency. Although steps (ii) and (vii) are not used in the calculations, their values should be recorded to complete the data set for the test sequence. This procedure does not depend on the amount of NO_2 in the span gas nor the equivalence of flows in the bypass and converter modes; however, to be consistent with good operating practice, flows should be nominally the same, and the NO_2 concentration should be less than 5 percent of the NO_{x2} span concentration. Efficiency checks should be made at a frequency (daily to weekly) consistent with good quality assurance provisions.

(7) Check the efficiency of the sample conditioning system, if used, by the following procedure;

(i) Zero and span the CO instrument on its most sensitive scale.

(ii) Recheck zero.

(iii) Bubble a mixture of 3% CO_2 in N_2 through water at room temperature (68°—86° F.), through the conditioning column into the CO instrument. If the response meets the criteria of § 85.376–18(c)(11), then the conditioning column is functioning acceptably. If the response is higher than the specified limit, a new conditioning column should be installed and the test repeated.

(iv) Sample conditioining systems should be checked at a frequency consistent with observed column life or when the indicator of the column packing begins to show deterioration.

(b) HC, CO, CO_2 and NO_x measurement: Allow HC analyzer sample line and filter to heat to set point ±10° F (between 300 and3 90 ° F), and allow a minimum of 20 minutes warmup for the HC analyzer electronics and 2 hours for the CO, CO_2 and NO_x analyzers. (Power is normally left on infrared and chemiluminescence analyzers; but when not in use, the chopper motors of the infrared analyzers are turned off and the phototube high voltage supply of the chemiluminescence analyzer is placed in the standby position.) The following sequence of operations should be performed in conjunction with each series of measurements:

(1) Zero the analyzers. Obtain a stable zero on each amplifier meter and recorder. Recheck after tests.

(2) Introduce span gases and set the CO and CO_2 analyzer gains, the HC analyzer sample capillary flow rate and electronic gain control, if provided, and the NO, analyzer high voltage supply or amplifier gain to match the calibration curves. In order to avoid corrections, span and calibrate at the same flow rates used to analyze the test samples. Span gases should have concentrations equal to approximately 80 percent of full scale. If gain has shifted significantly on the CO or CO_2 analyzers, check tuning. If necessary, check calibration. Recheck after test. Show actual concentrations on chart.

(3) Check zeros; repeat the procedure in paragraphs (b) (1) and (2) of this section if required.

(4) Check flow rates and pressures.

(5) Continuously record (and integrate electronically, if desired) dilute hydrocarbon emission levels during test.

(6) Measure CO, CO_2, and NO_x concentrations of samples. Care should be exercised to prevent moisture from condensing in the sample collection bag.

(7) Check zero and span points.

(c) For the purposes of this section, the term "zero grade air" includes artificial "air" consisting of a blend of nitrogen and oxygen with oxygen concentrations between 18 and 21 mole percent.

§ 85.376–21 Dynamometer test runs.

(a) The vehicle shall be allowed to stand with the engine turned off for a period of not less than 12 hours before the cold start exhaust emission test. The vehicle shall be stored prior to the emission tests in such a manner that precipitation (e.g. rain or dew) does not occur on the vehicle. The complete dynamometer test consists of a cold start drive of 7.5 miles and simulates a hot start drive of 7.5 miles. The vehicle is allowed to stand on the dynamometer during the 10-minute time period between the cold and hot start tests. The cold start test is divided into two periods. The first period, representing the cold start "transient" phase, terminates at the end of the deceleration which is scheduled to occur at 505 seconds of the driving schedule. The second period, representing the "stabilized" phase, consists of the remainder of the driving schedule including engine shutdown. The hot start test similarly consists of two periods. The first period, representing the hot start "transient" phase, terminates at the same point in the driving schedule as the first phase of the cold start test. The second period of the hot start test, "stabilized" phase is assumed to be identical to the second period of the cold start test. Therefore, the hot start test terminates after the first period (505 seconds) is run.

(b) The following steps shall be taken for each test:

(1) Place drive wheels of vehicle on dynamometer without starting engine.

(2) Open the vehicle engine compartment cover and start the cooling fan.

(3) With the sample solenoid valves in the "dump" position connect evacuated sample collection bags to the two dilute exhaust sample connectors and to the two dilution air sample line connectors.

(4) Start the positive displacement pump, the sample pumps, the temperature recorder, and the heated hydrocarbon analysis recorder. (The constant volume sampler heat exchanger, the hydrocarbon analyzer continuous sample line and filter should be preheated to their respective operating temperatures before the test begins.)

(5) Adjust the sample flow rates to the desired flow rate (minimum of 10 c.f.h.). Set the hydrocarbon integrator counters and pump revolution counters to zero.

(6) Attach the flexible exhaust tube to the vehicle tailpipe(s).

(7) Simultaneously start the revolution counter for the positive displacement pump, position the sample solenoid valves to direct the sample flows into the "transient" exhaust sample bag and the "transient" dilution air sample bag, turn on the hydrocarbon analyzer system integrator and mark recorder chart, and start cranking engine.

(8) Fifteen seconds after the engine starts, place the transmission in gear.

(9) Twenty seconds after the engine starts, begin the initial vehicle acceleration of the driving schedule.

(10) Operate the vehicle according to the dynamometer driving schedule.

(11) At the end of the deceleration which is scheduled to occur at 505 seconds, simultaneously switch the sample flows from the "transient" bags to the "stabilized" bags, switch off revolution counter No. 1 and hydrocarbon integrator No. 1, mark hydrocarbon recorder chart and start counter No. 2 and hydrocarbon integrator No. 2. As soon as possible and in no case longer than 20 minutes after the end of this portion of the test disconnect the "transient" exhaust and dilution air sample bags, transfer them to the analytical system and process the samples according to § 85.376–20.

(12) Turn the engine off 2 seconds after the end of the last deceleration (at 1,369 seconds).

(13) Five seconds after the engine stops running, simultaneously turn off revolution counter No. 2 and hydrocarbon integrator No. 2, mark hydrocarbon recorder chart and position the sample solenoid valves to the "dump" position. As soon as possible and in no case longer than 20 minutes after the end of this portion of the test disconnect the "stabilized" exhaust and dilution air sample bags, transfer them to the analytical system and process the samples according to § 85.376–20.

(14) Immediately after the end of the sample period disconnect the exhaust tube from the tailpipe(s), turn off the cooling fan and close the engine compartment cover.

(15) Turn off the positive displacement pump or disconnect the exhaust tube from the tailpipe of the vehicle.

(16) Repeat the steps in subparagraphs (2) through (10) of this paragraph for the hot start test except only one evacuated sample bag is required for sampling exhaust gas and one for dilution air. The step in subparagraph (7) of this paragraph shall begin between 9 and 11 minutes after the end of the sample period for the cold start test.

(17) At the end of the deceleration which is scheduled to occur at 505 seconds, simultaneously turn off the No. 1 revolution counter and hydrocarbon integrator No. 1, mark hydrocarbon

recorder chart and position the sample solenoid valve to the "dump" position. (Engine shutdown is not part of the hot start sample period.)

(18) As soon as possible and in no case longer than 20 minutes after the end of this portion of the test disconnect the hot start "transient" exhaust, and dilution air sample bags, transfer them to the analytical system and process the samples according to § 85.376–20.

(19) Disconnect the exhaust tube from the vehicle tailpipe(s) and remove vehicle from dynamometer.

(20) The positive displacement pump may be turned off, if desired.

§ 85.376–22 Chart reading.

(a) Determine the HC, CO, CO_2, and NO_x concentrations of the dilution air and the CO, CO_2, and NO_x concentration of the dilute exhaust sample bags from the instrument deflection, computer printout, or recordings making use of appropriate calibration charts.

(b) Record integrated HC results, or manually integrate continuous chart. This chart provides a permanent record and can be graphically integrated if verification of the results of electronic integration is required.

(c) Determine the average dilute exhaust mixture temperatures from the temperature recorder trace if a recorder is used.

§ 85.376–23 Calculations (exhaust emissions).

The final reported test results shall be computed by use of the following formulae:

(a) For light duty diesel trucks:

$$Y_{wm} = (0.43\ Y_{ct} + 0.57\ Y_{ht} + Y_s)/7.5$$

Where:
Y_{wm} = Weighted mass emissions of each pollutant, i.e. HC, CO, or NO_x, in grams per vehicle mile.
Y_{ct} = Mass emissions as calculated from the "transient" phase of the cold start test, in grams per test phase.
Y_{ht} = Mass emissions as calculated from the "transient" phase of the hot start test, in grams per test phase.
Y_s = Mass emissions as calculated from the "stabilized" phase of the cold start test, in grams per test phase.

(b) The mass of each pollutant for each phase of both the cold start test and the hot start test is determined from the following:

(1) Hydrocarbon Mass:

$$HC_{mass} = V_{mix} \times Density_{HC} \times \frac{HC_{conc}}{1{,}000{,}000}$$

(2) Oxides of nitrogen Mass:

$$NO_{x_{mass}} = V_{mix} \times Density_{NO_2} \times \frac{NO_{x_{conc}}}{1{,}000{,}000} \times K_H$$

(3) Carbon monoxide Mass:

$$CO_{mass} = V_{mix} \times Density_{CO} \times \frac{CO_{conc}}{1{,}000{,}000}$$

(c) Meaning of symbols:

HC_{mass} = Hydrocarbon emissions, in grams per test phase.

$Density_{HC}$ = Density of hydrocarbons in the exhaust gas, assuming an average carbon to hydrogen ratio of 1:1.85, in grams per cubic foot at 68° F. and 760 mm. hg. pressure (16.33 gm./cu. ft.).

HC_{conc} = Hydrocarbon concentration of the dilute exhaust sample corrected for background, in p.p.m. carbon equivalent, i.e. equivalent propane×3.

$$HC_{conc} = HC_e - HC_d(1 - 1/DF)$$

Where:
HC_e = Average hydrocarbon concentrations of the dilute exhaust sample as calculated from the integrated HC traces, in p.p.m. carbon equivalent.
HC_d = Hydrocarbon concentration of the dilution air as measured in p.p.m. carbon equivalent.

$NO_{x_{mass}}$ = Oxides of nitrogen emissions, in grams per test phase.

$Density_{NO_2}$ = Density of oxides of nitrogen in the exhaust gas, assuming they are in the form of nitrogen dioxide, in grams per cubic foot at 68° F. and 760 mm. Hg pressure (54.16 gm./cu. ft.).

$NO_{x_{conc}}$ = Oxides of nitrogen concentration of the dilute exhaust sample corrected for background, in p.p.m.

$$NO_{x_{conc}} = NO_{x_e} - NO_{x_d}(1 - 1/DF)$$

Where:
NO_{x_e} = Oxides of nitrogen concentration of the dilute exhaust sample as measured, in p.p.m.
NO_{x_d} = Oxides of nitrogen concentration of the dilution air as measured, in p.p.m.

CO_{mass} = Carbon monoxide emissions, in grams per test phase.

$Density_{CO}$ = Density of carbon monoxide in grams per cubic foot at 68° F. and 760 mm. Hg pressure (32.97 gm./cu. ft.).

CO_{conc} = Carbon monoxide concentration of the dilute exhaust sample corrected for background, water vapor and CO_2 extraction, in p.p.m.

$$Co_{conc} = CO_e - CO_d\ (1 - 1/DF)$$

Where:
CO_e = Carbon monoxide concentration of the dilute exhaust sample volume corrected for water vapor and carbon dioxide extraction, in p.p.m. The calculation assumes the carbon to hydrogen ratio of the fuel is 1:1.85.

$$CO_e = (1 - 0.01925\ CO_{2e} - 0.000323\ R)\ CO_{em}$$

Where:
CO_{em} = Carbon monoxide concentration of the dilute exhaust sample as measured in p.p.m.
CO_{2e} = Carbon dioxide concentration of the dilute exhaust sample, in mole percent.
R = Relative humidity of the dilution air, in percent. (See § 85.376–19(m).)
CO_d = Carbon monoxide concentration of the dilution air corrected for water vapor extraction, in p.p.m.

$$Co_d = (1 - 0.000323\ R)\ CO_{dm}$$

Where:
CO_{dm} = Carbon monoxide concentration of the dilution air sample as measured, in p.p.m.

NOTE: If a CO instrument free of CO_2 and water vapor interference is used (§ 85.376–18(c)(13)) and the water trap and conditioning columns are not, CO_{em} can be substituted directly for CO_e and CO_{dm} can be substituted directly for CO_d.

$$DF = \frac{13.4}{CO_{2e} + (HC_e + CO_e) \times 10^{-4}}$$

V_{mix} = Total dilute exhaust volume in cubic feet per test phase corrected to standard conditions (528° R and 760 mm. Hg).

$$V_{mix} = V_0 \times N \frac{(P_B - P_1)\ (528°\ R)}{(760\ \text{mm. Hg})(T_p)}.$$

Where:
V_o=Volume of gas pumped by the positive displacement pump, in cubic feet per revolution. This volume is dependent on the pressure differential across the positive displacement pump. (See calibration techniques in Appendix III.)
N=Number of revolutions of the positive displacement pump during the test phase while samples are being collected.
P_B=Barometric pressure in mm. Hg.
P_1=Pressure depression below atmospheric measured at the inlet to the positive displacement pump.
T_p=Average temperature of dilute exhaust entering positive displacement pump during test while samples are being collected, in degrees Rankine.
K_H=Humidity correction factor.

$$K_H=\frac{1}{1-0.0047\ (H-75)}$$

NOTE: The constant 0.0047 will be updated to reflect any data which becomes available on Light-Duty diesel engine tests.
Where:
H=Abolute humidity in grains of water per pound of dry air.

$$H=\frac{(43.478)\ R_a\times P_d}{P_B-(P_d\times R_a/100)}$$

R_a=Relative humidity of the ambient air, in percent.
P_d=Saturated vapor pressure, in mm. Hg at the ambient dry bulb temperature.

(d) Example calculation of mass emissions values:

(1) For the "transient" phase of the cold start test assume V_0=0.29344 cu. ft. per revolution; N=10,485; R=48.0 percent; R_a=48.2 percent; P_B=762 mm. Hg; P_d=22.225 mm. Hg; P_1=70 mm. Hg; T_p=570° R; HC_e=105.8 p.p.m. carbon equivalent; NO_{xe}=11.2 p.p.m.; CO_{em}=306.6 p.p.m.; CO_{2e}=1.43 percent; HC_d=12.1 p.p.m.; NO_{xd}=0.8 p.p.m.; CO_{dm}=15.3 p.p.m. Then:

$$V_{mix}=\frac{(0.29344)\ (10{,}485)\ (762-70)\ (528)}{(760)\ (570)}=2595.0 \text{ cu. ft. per test phase.}$$

$$H=\frac{(43.478)\ (48.2)\ (22.225)}{762-(22.225\times 48.2/100)}$$

$$K_H=\frac{1}{1-0.0047(62-75)}=.9424.$$

$CO_e=(1-0.01925(1.43)-0.000323(48))306.0=293.4$ p.p.m.
$CO_d=(1-0.000323(48))15.3=15.1$ p.p.m.

$$DF=\frac{13.4}{1.43+(105.8+293.4)\times 10^{-4}}=9.116.$$

$HC_{cone}=105.8-12.1(1-1/9.116)=95.03.$
$HC_{mass}=(2595)(16.33)(95.03/1{,}000{,}000)=4.027$ grams per test phase.
$NO_{x_{cone}}=11.2-0.8(1-1/9.116)=10.49.$
$NO_{x_{mass}}=(2595)(54.16)(10.49/1{,}000{,}000)(0.9424)=1.389$ grams per test phase.
$CO_{cone}=293.4-15.1(1-1/9.116)=280.$
$CO_{mass}=(2595)(32.97)(280/1{,}000{,}000)=23.96$ grams per test phase.

(2) For the "stabilized" portion of the cold start test assume that similar calculations resulted in HC_{mass}=0.62 grams per test phase; NO_{xmass}=1.27 grams per test phase; and CO_{mass}=5.98 grams per test phase.

(3) For the "transient" portion of the hot start test assume that similar calculations resulted in HC_{mass}=0.51 grams per test phase; NO_{xmass}=1.38 grams per test phase; and CO_{mass}=5.01 grams per test phase.

(4) For a 1976 light-duty diesel truck:

$HC_{wm}=((0.43)(4.027)+(0.57)(0.51)+0.62)/7.5=0.352$ grams per vehicle mile.
$NO_{xwm}=((0.43)(1.389)+(0.57)(1.38)+1.27)/7.5=0.354$ grams per vehicle mile.
$CO_{wm}=((0.43)(23.96)+(0.57)(5.01)+5.98)/7.5=2.55$ grams per vehicle mile.

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§§ 85.376–24—85.376–27 [Reserved]

§ 85.376–28 Compliance with emission standards.

(a) The exhaust emission standards in § 85.376–1 apply to the emissions of vehicles for their useful life.

(b) Since it is expected that emission control efficiency will change with mileage accumulation on the vehicle, the emission level of a vehicle which has accumulated 50,000 miles will be used as the basis for determining compliance with the standards.

(c) The procedure for determining compliance of a new light duty motor vehicle with exhaust emission standards is as follows:

(1) Separate emission deterioration factors shall be determined from the emissions results of the durability data vehicles for each engine-system combination. A separate factor shall be established for exhaust HC, exhaust CO, and exhaust NO_x.

(i) The applicable results to be used in determining the deterioration factors for each combination shall be:

(*a*) All valid emission data from the tests required under § 85.376–7(b), except the zero mile tests. This shall include the official test results as determined in § 85.376–29 for all tests conducted on all durability vehicles of the combination selected under § 85.376–5(c) (including all vehicles elected to be operated by the manufacturer under § 85.376–5(c)(3)).

(*b*) All emission data from the tests conducted before and after the maintenance provided in § 85.376–(a)(1)(i).

(*c*) All emission data from tests required by maintenance approved under § 85.376–6(a)(1)(vi) in those cases where the Administrator conditioned his approval for the performance of such maintenance on the inclusion of such data in the deterioration factor calculation.

(ii) All applicable results shall be plotted as a function of the mileage on the system, rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through these data points. The interpolated 5,000 and 50,000 mile points on this line must be within the standards provided in § 85.376–1 or the data will not be acceptable for use in calculation of a deterioration factor.

(iii) An exhaust emission deterioration factor shall be calculated for each combination as follows:

$$\text{factor} = \frac{\text{exhaust emissions interpolated to 50,000 miles}}{\text{exhaust emissions interpolated to 5,000 miles.}}$$

These interpolated values shall be carried out to a minimum of four decimal points to the right before dividing one by the other to determine the deterioration factor. The results shall be rounded to three places to the right of the decimal point in accordance with ASTM E 29–67.

(2) The exhaust emission test results for each emission data vehicle shall be multiplied by the appropriate deterioration factor: *Provided,* That if a deterioration factor as compared in subparagraph (1)(iii) of this paragraph is less than one, that deterioration factor shall be one for the purposes of this subparagraph.

(3) The emissions to compare with the standard shall be the adjusted emissions of paragraph (c)(2) for each emission data vehicle.

Before any emission value is compared to the standard, it shall be rounded, in accordance with ASTM E 29–67, to two significant figures. The rounded emission values shall not exceed the standard.

(4) Every test vehicle of an engine family must comply with all applicable standards, as determined in paragraph (c)(3) of this section, before any vehicle of that family may be certified.

§ 85.376–29 Testing by the Administrator.

(a) The Administrator may require that any one or more of the test vehicles be submitted to him, at such place or places as he may designate, for the purpose of conducting emission tests. The Administrator may specify that he will conduct such testing at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(b)(1) Whenever the Administrator conducts a test on a test vehicle, the results of that test shall comprise the official data for the vehicle at that prescribed test point and the manufacturer's data for that prescribed test point shall not be used in determining compliance with emission standards.

(2) Whenever the Administrator does not conduct a test on a test vehicle at a test point, the manufacturer's test data will be accepted as the official data for that test point: *Provided,* That if the Administrator makes a determination based on testing under paragraph (a) of this section, that there is a lack of correlation between the manufacturer's test equipment and the test equipment used by the Administrator, no manufacturer's test data will be accepted for purposes of certification until the reasons for the lack of correlation are determined and the validity of the data is established by the manufacturer: *And further provided,* That if the Administrator has reasonable basis to believe that any test data submitted by the manufacturer is not accurate or has been obtained in violation of any provisions of this part, the Administrator may refuse to accept that data as the official data pending retesting or submission of further information.

(3)(i) The emission data vehicle presented to the Administrator for testing shall be calibrated within the production tolerances applicable to the manufacturer's specifications to be shown on the vehicle label (see § 85.376–35(a)(4)(iv)) as specified in the application for certification. If the Administrator determines that a vehicle is not within such tolerances, the vehicle shall be adjusted, at the facility designated by the Administrator, prior to the test and an engineering report shall be submitted to the Administrator describing the corrective action taken. Based on the engineering report, the Administrator will determine if the vehicle shall be used as an emission data vehicle.

(ii) If the Administrator determines that the test data developed under paragraph (b)(3)(i) of this section would cause an emission data vehicle to fail due to excessive 4,000 mile emissions or by application of the appropriate deterioration factor, then the following procedure shall be observed:

(a) The manufacturer may request a retest. Before the retest, the vehicle may be readjusted to manufacturer's specifications, if these adjustments were made incorrectly prior to the first test, and parts may be replaced in accordance with § 85.376–6. All work on the vehicle shall be done at such location and under such conditions as the Administrator may prescribe.

(b) The vehicle will be retested by the Administrator and the results of this test shall comprise the official data for that prescribed test point.

(4) If sufficient durability data are not available, at the time of any emission test conducted under paragraph (a) of this section, to enable the Administrator to determine whether an emission data vehicle would fail, the manufacturer may request a retest in accordance with the provisions of paragraph (c)(3)(i)(a) and (b) of this section. If the manufacturer does not promptly make such request, he shall be deemed to have waived the right to a retest. A request for retest must be made before the manufacturer removes the vehicle from the test premises.

§ 85.376–30 Certification.

(a)(1) If, after a review of the test reports and data submitted by the manufacturer and data derived from any additional testing conducted pursuant to § 85.376–29, the Administrator determines that a test vehicle(s) conforms to the regulations of this subpart, he will issue a certificate of conformity with respect to such vehicle. The certificate will state which vehicles are certified for sale at high altitude.

(2) Such certificate will be issued for such period not to exceed one model year as the Administrator may determine and upon such terms as he may deem necessary to assure that any new motor vehicle covered by the certificate will meet the requirements of the Act and of this subpart. Each such certificate shall contain the following language:

This certificate covers only those new motor vehicles which conform, in all material respects, to the design specifications that applied to those vehicles described in the application for certification and which are produced during the ____ model year production period of the said manufacturer, as defined in 40 CFR 85.302(a)(3).

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 85.306(c) which concern either the vehicle certified, or any production vehicle covered by this certificate, or any production vehicle which when completed will be claimed to be covered by this certificate. Failure ot comply with all the requirements of § 85.306(c) with respect to any such vehicle may lead to revocation or suspension of this certificate as specified in 40 CFR 85.376(c). It is also a term of this certificate that this certificate may be revoked or suspended for the other reasons stated in 85.376–30(c).

(b)(1) The Administrator will determine whether a vehicle covered by the application complies with applicable standards by observing the following relationships:

(i) A test vehicle selected under § 85.376–5(b)(2) or (4) shall represent all vehicles in the same engine family of the same engine displacement-exhaust emission control system combination.

(ii) A test vehicle selected under § 85.376–5(b)(3) shall represent all vehicles in the same engine family of the same engine displacement-exhaust emission control system-transmission type-fuel system combination.

(iii) A test vehicle selected under § 85.376–5(c)(1) shall represent all vehicles of the same engine-system combination.

(2) The Administrator will proceed as in paragraph (a) of this section with respect to the vehicles belonging to an engine family all of which comply with applicable standards.

(3) If, after a review of the test reports and data submitted by the manufacturer, data derived from any additional testing conducted pursuant to § 85.175–29, data or information derived from any inspection carried out under § 85.106(c), or any other pertinent data or information, the Administrator determines that one or more test vehicles of the certification test fleet do not meet applicable standards, he will notify the manufacturer in writing, setting forth the basis for his determination.

(4) The manufacturer may, at his option, proceed with any of the following alternatives with respect to any engine family represented by a test vehicle(s) determined not in compliance with applicable standards:

(i) Request a hearing under § 85.305, or

(ii) Delete from the application for certification the vehicles represented by the failing test vehicle. (Vehicles so deleted may be included in a later request for certification under § 85.376–32.) The Administrator will then select in place of each failing vehicle an alternate vehicle chosen in accordance with selection criteria employed in selecting the vehicle that failed, or

(iii) Modify the test vehicle and demonstrate by testing that it meets applicable standards. Another vehicle which is in all material respects the same as the first vehicle, as modified, shall then be operated and tested in accordance with applicable test procedures.

(5) If the manufacturer does not request a hearing or present the required data under paragraph (b)(4) of this section, the Administrator will deny certification.

(c)(1) Notwithstanding the fact that any certification vehicle(s) may comply with other provisions of this subpart, the Administrator may withhold or deny the issuance of a certificate of conformity (or suspend or revoke any such certificate which has been issued) with respect to any such vehicle(s) if:

(i) The manufacturer submits false or incomplete information in his application for certification thereof; or

(ii) The manufacturer renders inaccurate or invalid any test data which he submits pertaining thereto or otherwise circumvents the intent of the Act or of this subpart with respect to such vehicle; or

(iii) Any EPA Enforcement Officer is denied access on the terms specified in § 85.306(c) to any facility or portion thereof which contains any of the following:

(A) The vehicle, or

(B) Any components used or considered for use in its modification or build-up into a ceritfication vehicle, or

(C) Any production vehicle which is or will be claimed by the manufacturer to be covered by the certificate, or

(D) Any step in the conastruction of a vehicle described in paragraph (c)(1)(iii)(C) of this section, or

(E) Any records, documents, reports and histories required by this part to be kept concerning any of the above.

(iv) Any EPA Enforcement Officer is denied "reasonable asistance" (as defined in § 85.306(c)) in examining any of the items listed in paragraph (c)(1)(iii) of this section.

(2) The sanctions of withholding, denying, revoking, or suspending of a certificate may be imposed for the reasons in paragraphs (c)(1)(i), (ii), (iii), or (iv) of this section only when the infraction is substantial.

(3) In any case in which a manufacturer knowingly submits false or inaccurate information or knowingly renders inaccurate or invalid any test data or commits any other fraudulent acts and such acts contribute substantially to the Administrator's decision to issue a certificate of conformity, the Administrator may deem such certificate void ab initio.

(4) In any case in which certification of a vehicle is proposed to be withheld, denied, revoked, or suspended under paragraph (c)(1)(iii), or (c)(1)(iv) of this section, and in which the Administrator has presented to the manufacturer involved reasonable evidence that a violation of § 85.306(c) in fact occurred, the manufacturer, if he wishes to contend that, even though the violation occurred, the vehicle in question was not involved in the violation to a degree that would warrant withholding, denial, revocation, or suspension of certification under either paragraph (c)(1)(iii) or (c)(1)(iv) of this section, shall have the burden of establishing that contention to the satisfaction of the Administrator.

(5) Any revocation or suspension of certification under paragraph (c)(1) of this section shall:

(i) Be made only after the manufacturer concernde has been offered an opportunity for a hearing conducted in accordance with § 85.306(c) hereof.

(ii) Extend no further than to forbid the ntroduction into comerce of vehicles previously covered by the certification which are still in the hands of the manufacturer, except in cases of such fraud or other misconduct as makes the certification invalid ab initio.

(6) The manufacturer may request in the form and manner specified in paragraph (b)(3) of this section that any determination made by the Administrator under paragraph (c)(1) of this section to withhold or deny certification be reviewed in a hearing conducted in accordance with § 85.305. If hte Administrator finds, after a review of the request and supporting data, that the request raises a substantial factual issue, he shall grant the request with respect to such issue.

§ 85.376–31 Separate certification.

Where possible a manufacturer should include in a single application for certification all vehicles for which certification is required. A manufacturer may, however, choose to apply separately for certification of part of his product line. The selection of test vehicles and the computation of test results will be determined separately for each application.

§ 85.376–32 Addition of a vehicle after certification.

(a) If a manufacturer proposes to add to his product line a vehicle of the same engine-system combination as vehicles previously certified but which was not described in the application for certification when the test vehicle(s) representing other vehicles of that combination was certified, he shall notify the Administrator. Such notification shall be in advance of the addition unless the manufacturer elects to follow the procedure described in § 85.376–34. This notification shall include a full description of the vehicle to be added.

(b) The Administrator may require the manufacturer to perform such tests on the test vehicle(s) representing the vehicle to be added which would have been required if the vehicle had been included in the original application for certification.

(c) If, after a review of the test reports and data submitted by the manufacturer, and data derived from any testing conducted under § 85.376–29, the Administrator determines that the test vehicle(s) meets all applicable standards, the appropriate certificate will be amended accordingly. If the Administrator determines that the test vehicle(s) does not meet applicable standards, he will proceed under § 85.376–30(b).

§ 85.376–33 Changes to a vehicle covered by certification.

(a) The manufacturer shall notify the Administrator of any change in production vehicles in respect to any of the parameters listed in § 85.376–5(a)(3) or § 85.376–5(b)(3), giving a full description of the change. Such notification shall be in advance of the change unless the manufacturer elects to follow the procedure described in § 85.376–34.

(b) Based upon the description of the change, and data derived from such testing as the Administrator may require or conduct, the Administrator will determine whether the vehicle, as modified, would still be covered by the certificate of conformity then in effect.

(c) If the Administrator determines that the outstanding certificate would cover the modified vehicles, he will notify the manufacturer in writing. Except as provided in § 85.376–34, the change may not be put into effect prior to the manufacturer's receiving this notification. If the Administrator determines that the modified vehicles would not be covered by the certificate then in effect, then the modified vehicles shall be treated as additions to the product line subject to § 85.376–32.

§ 85.376–34 Alternative procedure for notification of additions and changes.

(a) A manufacturer may, in lieu of notifying the Administrator in advance of an addition of a vehicle under § 85.376–32 or a change in a vehicle under § 85.376–33, notify him concurrently with the making of the change if the manufacturer believes the addition or change will not require any testing under the appropriate section. Upon notification to the Administrator, the manufacturer may proceed to put the addition or change into effect.

(b) The manufacturer may continue to produce vehicles as described in the notification tc the Administrator for a maximum of 30 days, unless the Administrator grants an extension in writing. This period may be shortened by a notification in accordance with paragraph (c) of this section.

(c) If the Administrator determines, based upon a description of the addition or change, that no test data will be required, he will notify the manufacturer in writing of the acceptability of the addition or change. If the Administrator determines that test data will be required, he will notify the manufacturer to re-

scind the change within 5 days of receipt of the notification. The Administrator will then proceed as in § 85.376–32 (b) and (c), or § 85.376–33 (b) and (c) as appropriate.

(d) Election to produce vehicles under this section will be deemed to be a consent to recall all vehicles which the Administrator determines under § 85.376–32(c) do not meet applicable standards, and to cause such nonconformity to be remedied at no expense to the owner.

§ 85.376–35 Labeling.

(a)(1) The manufacturer of any light duty motor vehicle subject to the standards prescribed in § 85.376–1 shall, at the time of manufacture, affix a permanent, legible label, of the type and in the manner described below, containing the information hereinafter provided, to all production models of such vehicles available for sale to the public and covered by a certificate of conformity under § 85.376–30(a).

(2) A plastic or metal label shall be welded, riveted, or otherwise permanently attached in a readily visible position in the engine compartment.

(3) The label shall be affixed by the vehicle manufacturer, who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label, and shall not be affixed to any equipment which is easily detached from such vehicle.

(4) The label shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label:

(i) The label heading: Vehicle Emission Control Information;

(ii) Full corporate name and trademark of manufacturer;

(iii) Engine displacement (in cubic inches) and engine family identification;

(iv) Engine tuneup specifications and adjustments, as recommended by the manufacturer, including, but not limited to, low and high idle speeds, initial injection timing, and valve lash, as well as other parameters deemed necessary by the manufacturer. These specifications should indicate the proper transmission position during tuneup and what accessories (e.g., air-conditioner), if any, should be in operation;

(v) The statement: "This Vehicle Conforms to U.S.E.P.A. Regulations Applicable to 1975 Model Year New Motor Vehicles."

(b) The provisions of this section shall not prevent a manufacturer from also reciting on the label that such vehicle conforms to any applicable State emission standards for new motor vehicles or any other information that such manufacturer deems necessary for, or useful to, the proper operation and satisfactory maintenance of the vehicle.

§ 85.376–36 Submission of vehicle identification numbers.

(a) The manufacturer of any light duty motor vehicle covered by a certificate of conformity under § 85.376–30(a) shall, not later than 60 days after its manufacture, submit to the Administrator the vehicle identification number of such vehicle: *Provided*, That this requirement shall not apply with respect to any vehicle manufactured within any State, as defined in section 302(d) of the Act.

(b) The requirements of this section may be waived with respect to any manufacturer who provides information satisfactory to the Administrator which will enable the Administrator to identify those vehicles which are covered by a certificate of conformity.

§ 85.376–37 Production vehicles.

(a) Any manufacturer obtaining certification under this subpart shall supply to the Administrator, upon his request, a reasonable number of production vehicles selected by the Administrator which are representative of the engines, emission control systems, fuel systems, and transmissions offered and typical of production models available for sale under the certificate. These vehicles shall be supplied for testing at such time and place and for such reasonable periods as the Administrator may require.

(b) Any manufacturer obtaining certification under this subpart shall notify the Administrator, on a quarterly basis, of the number of vehicles of each engine family - engine displacement - exhaust emission control system-fuel system-transmission type-inertia weight class combination produced for sale in the United States during the preceding quarter. A manufacturer may elect to provide this information every 60 days instead of quarterly, to combine it with the notification required under § 85.376–36.

(c) All light duty vehicles covered by a certificate of conformity under § 85.376–30(a) shall be adjusted by the manufacturer to the ignition timing specification detailed in § 85.376–35(a)(4)(iv).

§ 85.376–38 Maintenance instructions.

(a) The manufacturer shall furnish or cause to be furnished to the ultimate purchaser of each new motor vehicle subject to the standards prescribed in § 85.376–1, written instructions for the maintenance and use of the vehicle by the ultimate purchaser as may be reasonable and necessary to assure the proper functioning of emission control systems.

(1) Such instructions shall be provided for those vehicle and engine components listed in Appendix VI to this part (and for any other components) to the extent that maintenance of these components is necessary to assure the proper functioning of emission control systems.

(2) Such instructions shall be in clear, and to the extent practicable, nontechnical language.

(b) The maintenance instructions required by this section shall contain a general description of the documentation which the manufacturer will require from the ultimate purchaser or any subsequent purchaser as evidence of compliance with the instructions.

§ 85.376–39 Submission of maintenance instructions.

(a) The manufacturer shall provide to the Administrator, no later than the time of the submission required by § 85.376–4, a copy of the maintenance instructions which the manufacturer proposes to supply to the ultimate purchaser in accordance with § 85.376–38(a). The Administrator will review such instructions to determine whether they are reasonable and necessary to assure the proper functioning of the vehicle's emission control systems. The Administrator will notify the manufacturer of his determination whether such instructions are reasonable and necessary to assure the proper functioning of the emission control systems.

(b) Any revision to the maintenance instructions which will affect emissions shall be supplied to the Administrator at least 30 days before being supplied to the ultimate purchaser unless the Administrator consents to a lesser period of time.

§ 85.377–1 Emission standards for 1977 model year light duty diesel trucks.

The standards and test procedures set forth in § 85.376 remain applicable for the 1977 model year.

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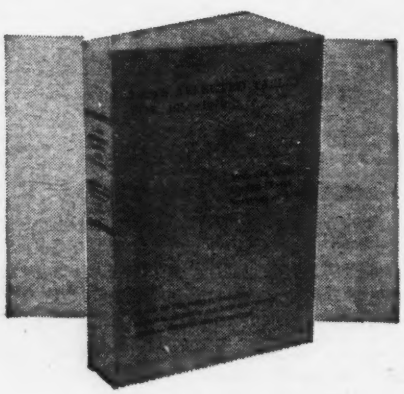
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